CHAPTER 9

NATURAL RESOURCES

9.1 INTRODUCTION

This chapter provides a background survey of the natural resources within Placer County, including its water, soils and agriculture, biological, mineral, air and open space resources.

Consideration of these environmental resources and their current use and management forms a basis for land use planning that maximizes opportunities and minimizes environmental degradation. These elements are fundamental in helping define the character and future of Placer County. Planning for the conservation of these natural resources is a required part of a general plan. The information in this chapter is the basis for the mandatory Conservation and Open Space Elements of the general plan.

9.2 WATER RESOURCES

The quantity, quality, and availability of water is vital to natural processes and human activities. Water is essential to develop housing, commerce and industry, and recreation, and to maintain high-quality fish and wildlife habitats.

Placer County, spanning the eastern part of the Central Valley of California to the Sierra Nevada, contains an abundance of water resources. Approximately 700 miles of rivers and streams and 97,000 acres of lakes are within the county.

PRECIPITATION

Precipitation in Placer County varies widely, based primarily on elevation. The average annual precipitation near Roseville, at 160 feet above sea level, is approximately 20 inches; near Auburn, at an elevation of approximately 2,000 feet, precipitation averages 38 inches. The snowline begins near Colfax and snow depth varies significantly across the eastern part of the county beyond the 9,000-foot crest of the Sierra Nevada.

SURFACE WATER

Placer County can be divided into the nine surface water drainage basins described below and depicted on Figure 9-1.

The South Yuba River drainage basin begins in the Donner Pass area and covers approximately 177,000 acres, of which only a small portion lies within Placer County. The South Yuba River is accessible to the public along Interstate 80 from Donner Summit to Indian Springs Campground.

The Bear River drainage basin begins near Emigrant Gap and extends along the northern boundary of the county. Lower reaches of the river include Rollins Lake, Lake Combie, and Camp Far West Reservoir, which are generally accessible to the public. The upper reaches are not readily accessible.

The Truckee River drainage basin begins at the outlet from Lake Tahoe and extends into Nevada County. This watershed has an area of approximately 121,000 acres. The basin includes Prosser Reservoir, which

was constructed by the U.S. Bureau of Reclamation as part of the Washoe Project. A flood-control reservoir on Martis Creek was constructed by the U.S. Army Corps of Engineers (Corps). The Truckee River and most of its tributaries are accessible to the public.

The Tahoe Basin includes all drainages into Lake Tahoe. The Placer County portion of the watershed is approximately 43,000 acres. Lake Tahoe is one of the world's largest high-altitude lakes and contains a significant amount of California's surface water. Most of the waterfront is privately owned and public access is limited, yet the Tahoe Basin seasonally attracts high water-recreation use.

The North Fork American River has its headwaters in the Granite Chief area, and has a relatively narrow drainage basin above Folsom Lake. Several small, natural lakes are located at the heads of tributary streams, including Palisade Lake, Loch Leven Lakes, and Huntly Mill Lake. Pacific Gas and Electric Company (PG&E) operates Lake Valley Reservoir and Kelly Lake for hydroelectric facilities. Federal legislation has designated the North Fork American River above the Auburn State Recreation Area as a National Wild and Scenic River, precluding motorized river access or activities on the river, but permitting access on foot. Land surrounding the upper North Fork American River in the vicinity of "the Cedars" is privately owned and not accessible to the public. The headwater areas of the major tributaries are accessible by trails and roads.

The Middle Fork American River drainage basin begins in the Picayune Valley and the river forms part of the southern boundary of Placer County. Except for the French Meadows area in the upper part of the basin, public access is limited to trails.

The Rubicon River basin begins the Five Lakes area at the crest of the Sierra Nevada. Much of the area has limited public access because the area has not been logged previously.

The Dry Creek basin includes the southwestern portion of Placer County. Streams and creeks drain into Sacramento County and eventually reach the Natomas East Main Drain and the Sacramento River. Numerous small reservoirs, stock ponds, and real estate lakes are present with the urbanizing Dry Creek basin. Public access is limited because most of these lands are privately owned.

The Sacramento River basin includes most of western Placer County. This basin is similar to the Dry Creek basin; however, the streams flow west through Sutter County to the Sacramento River. The streams that flow west to the Sacramento River include Coon Creek, Auburn Ravine and Orchard Creek, Markham Ravine, Pleasant Grove Creek, Kaseburg Creek, and Curry Creek.

Inventory of Surface Water Resources

The river systems within Placer County are characterized by a complex series of reservoirs and watershed transfers. Most of these transfers are made for power production and include the diversion of water from the South Yuba River to the Bear River, from the Bear River to Folsom Lake, from the Middle Fork of the American River to the Rubicon River, and from the Rubicon River to the Middle Fork of the American River. (U.S. Geological Survey 1992.)

Flows, discharge rates, and drainage areas or major river in the county are shown in Table 9-1. Maximum storage and primary use of major reservoirs in the county are shown in Table 9-2. The locations of these reservoirs are shown on Figure 9-1.

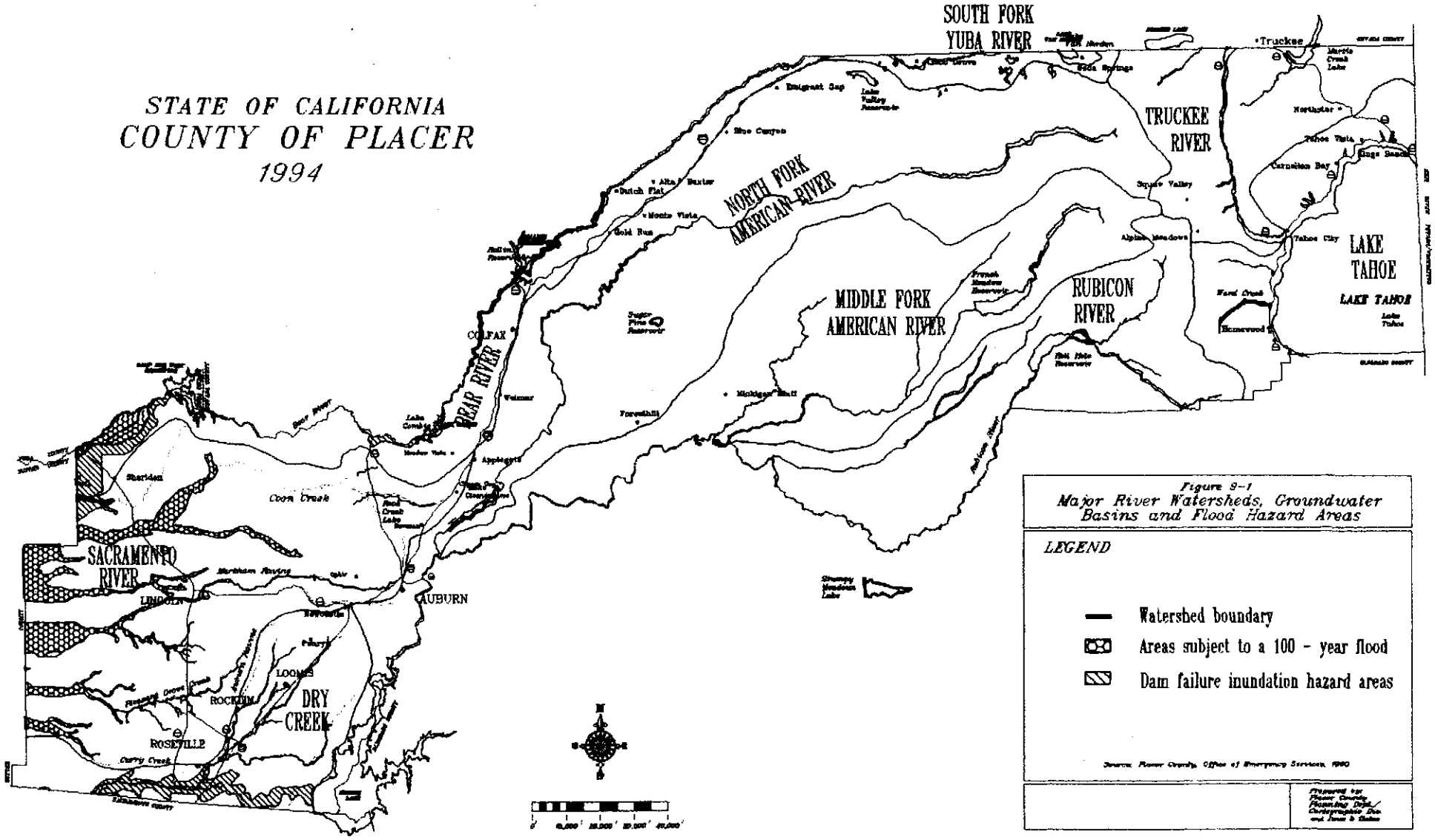


Figure 8-1
Major River Watersheds, Groundwater Basins and Flood Hazard Areas

LEGEND

- Watershed boundary
- Areas subject to a 100 - year flood
- Dam failure inundation hazard areas

Source: Placer County, Office of Emergency Services, 1990

Prepared for Placer County Planning Dept. Cartographic Dsn. and Text by Quincy

TABLE 9-1

ANNUAL FLOWS OF MAJOR RIVERS IN PLACER COUNTY

River	Drainage Area (square miles)	Flow (cfs)	Annual Discharge (acre-feet)
Bear			
Below Rollins Lake	105	376[a]	272,400[a]
Below PG&E Diversion near Colfax	105+	309[b]	223,900[b]
Below New Camp West Reservoir	ND	31[c]	ND[c]
American			
Middle Fork near Foresthill	89	66[d]	47,960[d]
Middle Fork below confluence with Rubicon River	524	1,111[e]	804,900[e]
North Fork below North Fork Dam	342	809[f]	586,900[f]
Truckee			
At Tahoe City	507	252[g]	182,600[g]

Note: ND = not determined.
[a] 32-year average.
[b] 68-year average.
[c] maximum flow 1989-1991.
[d] 20-year average.
[e] 33-year average.
[f] 50-year average.
[g] 91-year average.

Source: U.S. Geological Survey 1992.

TABLE 9-2

MAJOR RESERVOIRS IN PLACER COUNTY

Reservoir	Location	Storage (acre-feet)	Operator[a]	Use[b]
Folsom	American River	1,010,000	Reclamation	Dom/Irr/Mun/Pwr
Lake Valley	North Fork American River	7,960	PG&E	Pwr/Rec
Clementine	North Fork American River	12,800	Corps	Pwr/Rec
French Meadows	Middle Fork American River	136,400	PCWA	Dom/Irr/Mun/Pwr
Hell Hole	Rubicon River	207,550	PCWA	Dom/Irr/Mun/Pwr
Sugar Pine	Shirttail Creek	7,000	FPUD	Dom/Irr/Rec
Rollins	Bear River	66,270	NID	Dom/Irr/Mun/Pwr
Camp Far West	Bear River	102,200	So. Sutter Irr. Dist.	Irr/Rec

[a] Reclamation = U.S. Bureau of Reclamation.
PG&E = Pacific Gas and Electric Company.
Corps = U.S. Army Corps of Engineers.
PCWA = Placer County Water Agency.
FPUD = Foresthill Public Utilities District.
NID = Nevada Irrigation District.

[b] Irr = irrigation.
Pwr = power.
Rec = recreation.
Mun = municipal.
Dom = domestic.
Ind = industrial.

Sources: County of Placer 1990, California Department of Finance 1990, U.S. Geological Survey 1992.

Based on a review of the summary of large water systems in Placer County, the most important sources of domestic water in the county are the Bear River, the American River, Folsom Lake, and Lake Tahoe. Water from the Bear River is used to supply numerous water service areas in the western portion of the county. Water from Folsom Lake is delivered to Roseville. Delivery of water from Lake Tahoe is limited to the Tahoe Basin and areas downstream in California and Nevada with Truckee River diversions.

As shown in Table 9-3, waters from the Bear River and Folsom Lake each serve approximately 23 percent of the total population within all the large water system service areas in the county and account for approximately 23 percent and 53 percent respectively of the total water consumed within all large service areas. Water from Lake Tahoe serves approximately 27 percent of the total population in large water system service areas and accounts for 14 percent of the total water consumed within all large service areas. Groundwater also represents an important source of water in large service areas and is consumed by over 22 percent of the total population within all large service areas.

TABLE 9-3

SOURCES OF DOMESTIC WATER IN PLACER COUNTY
1990

Source	Population		Annual Consumption (Acre-Feet)	
	Total	Percentage of Total	Total	Percentage of Total
Bear River	41,046	22.6	1,953	22.4
Lake Tahoe	49,600	27.2	1,194	13.7
Other surface water	11,600	6.4	153	1.8
Folsom Reservoir	41,000	22.5	4,641	53.3
Sugar Pine Reservoir	5,004	2.8	295	3.4
Groundwater	33,811	18.6	474	5.4
Total	**182,061**	**100.0**	**8,710**	**100.0**

Note: Population and annual use totals are based on large water system service areas in Placer County. Large water systems serve 200 or more connections and are under jurisdiction of the California Department of Health Services.

Source: Psomas and Associates 1992.

Wetlands

Surface water resources located throughout Placer County include a variety of wetlands. Wetlands are present where water saturation of surrounding land is the dominant factor determining the soil development and the types of associated plant and animal communities. Wetlands are considered

transitional between terrestrial and aquatic systems and provide essential breeding, rearing, and feeding grounds for many species of fish and wildlife. Wetlands may also perform important functions for natural flood protection and pollution control.

Wetlands found throughout Placer County are typically found at the margins of lakes and streams, in low-lying areas that collect precipitation, and in areas where groundwater intercepts the ground surface. Wetlands may be seasonal or perennial; for example, wetlands can be found as wet meadows high in the Sierra Nevada, as vernal pools in the Central Valley, or as nuisance vegetation in flood-control channels. Because of the widespread extent and the relatively small size of wetlands in Placer County, they are not shown in Figure 9-1. The biological resource function types and general locations of wetlands are identified in more detail in the biological resources section below.

Surface Water Quality

Surface water in Placer County is typically of excellent quality for all uses. Most of the water originates in the Sierra Nevada, which is predominantly of granitic origin. Water quality objectives are designed to meet all state and federal requirements for maintenance of water quality. These requirements establish thresholds for water quality indicators that include dissolved oxygen, temperature, acidity, nutrients, and toxic metals. (U.S. Geological Survey 1987.)

Although water quality trend studies have never been done for the American River basin, the waters above Folsom Lake have good quality and are suitable for all beneficial uses as specified by the California Department of Health Services (U.S. Geological Survey 1987). Most of the focus of comprehensive water quality studies of waters in American River basin has been on the lower American River below Folsom Lake.

A review of available data from monitoring locations within the American River basin above Folsom Dam indicates that dissolved oxygen and temperature levels have all been above the specified water quality limit. All measured specific conductance values are below suggested limits. Acidity levels outside the water quality objective range have been observed on the Middle Fork of the American River and are probably attributable to the photosynthetic activity of aquatic plants that absorb dissolved carbon dioxide during daylight. The specified concentration for nitrate has not been exceeded; however, the concentrations of phosphorus have been exceeded at all observation sites in the upper American River basin but these observations infrequently approached the suggested limits. The tolerance levels for toxic metals in animal tissue consumed by humans, as specified by the U.S. Food and Drug Administration, have not been exceeded. (U.S. Geological Survey 1987.)

Water quality degradation in the American River has occurred primarily downstream from Folsom Dam and results from the effects of increased urbanization and recreation. In contrast, the small number of water quality violations recorded in the upper basin above Folsom Lake indicates that observed problems in this part of the basin are minimal. Recreation overuse, improper land use, or poorly managed mining operations are potential sources of future water quality problems in the upper basin. For example, the increase in the number of recreational homes along the South Fork could result in an increase in the risk of bacterial or viral contamination from wastewater and stimulate growth of aquatic plants. Increased timber harvesting activities could result in higher water temperatures by removing streamside vegetation and increase nutrient runoff as a result of fertilizer application to replanted areas.

The Truckee River and some of its tributaries have been placed on the "Water Quality Limited Segment" list under Section 303(d) of the Clean Water Act due to metals problems; elevated levels of silver, zinc

and lead have been found in the region. Furthermore, recent results of fish tissue and sediment samplings in the Truckee River indicate problems with metals and organic chemicals within the watershed.

Lake Tahoe is a unique surface water body in Placer County It is singularly the largest body of freshwater in California. It is extraordinarily clear due to extremely low algae growth rates. The Federal Clean Water Act requires that the existing high quality of the waters of Lake Tahoe are to be preserved. In recognition of this the State Water Quality Control Board adopted the "Lake Tahoe Basin Water Quality Control Plan" and the TRPA adopted the "Water Quality Management Plan for the Lake Tahoe Region". These plans, prepared to meet the Section 208 requirements of the Clean Water Act, affect the future development in the Placer County portion of the watershed. In particular, these plans provide a Tahoe Basin land capability system, stream environment zone protection and restoration programs, and the need for basin-wide implementation of remedial erosion control projects and areawide stormwater control systems.

Based on available data, the quality of surface water within Placer County is generally good. Although comprehensive studies of other surface water sources in the county, such as the Bear River and Truckee River basins, are not available, the quality of water within these drainages is expected to be similar to the American River because of shared natural attributes. In addition, water quality in these drainages could also be affected by the same problems in the upper American River basin. These problems, as described above, include recreation overuse, improper land use, mining operations, and timber harvesting.

GROUNDWATER

Groundwater resources and their availability are discussed in Chapter 6. The three general groundwater resource areas are identified in Figure 6-2. Western Placer County lies over the eastern edge of the Sacramento Valley groundwater basin. This subsurface groundwater basin extends from Tehama County in the north to Solano and Sacramento Counties in the south. The basin is estimated to contain approximately 114 million acre-feet (af) of water, of which an average of 2 million af is pumped for agricultural irrigation and domestic and industrial uses yearly. Several distinct water-bearing layers (or aquifers) are within the basin, ranging in depth from 20 to 600 feet below the surface.

The central Placer County groundwater region is located east of the Sacramento Valley on the western slopes of the Sierra Nevada. Groundwater is generally found in zones of fractured rock. Although some areas yield well, most of this area has limited quantities of groundwater.

In the eastern part of the county, groundwater is found in the Tahoe Basin in narrow strips of alluvial and glacial sediments along portions of the lake shore and in small, deeper aquifers in fractured volcanic rocks. The Martis Valley is a second important groundwater area in the eastern part of the county.

Groundwater Quality

Groundwater quality is considered inferior to that of surface waters from the Sierra Nevada. Minerals associated with the sedimentary rocks of the groundwater basin dissolve in the water, sometimes affecting its taste noticeably and unpleasantly. Very shallow aquifers also can be contaminated by nitrates and other materials originating at the ground surface as a result of human activities, such as fertilizer use, livestock ranching, residential septic tank use, and municipal sewage disposal (Figure 6-12).

EXISTING WATER RESOURCE MANAGEMENT PLANS

Water resources that flow west from the Sierra Nevada crest through Placer County ultimately drain to the Delta and San Francisco Bay or are diverted for various consumptive uses. Water that flows east from the Sierra Nevada crest drains the Truckee River watershed and is either diverted for consumptive uses or flows into Pyramid Lake in Nevada. Several water resource management agencies have plans that affect the use and future development of water within Placer County:

- U.S. Bureau of Reclamation, Central Valley Project;
- California Department of Water Resources, State Water Project;
- California State Water Resources Control Board;
- Tahoe Regional Planning Agency; and
- Placer County Water Agency.

In addition to these major agencies, a number of public and quasi-public utilities affect water resources in the county. These include a number of municipal water districts, irrigation districts, and PG&E. Water resource management by these agencies has resulted in an extremely complex legal and administrative framework.

9.3 SOIL AND AGRICULTURAL RESOURCES

SOIL RESOURCES

The types of soils present in Placer County vary widely from the Central Valley to the Sierra Nevada. The factors that influence the pattern of soils present in the county include a combination of the type of underlying rocks, local climatic conditions, local topography, type of native vegetation, and the development stage of the soil (Brady 1974).

Soil Survey

Soil information is primarily limited to reports and soil maps prepared by the U.S. Soil Conservation Service (SCS). The SCS soil classification system is concerned primarily with differentiating soils according to their capacity for cultivation.

The SCS classification system organizes soils into eight major capability classes designated by Roman numerals I through VIII. Class I and II soils have few limitations, the widest range of use, and the least risk of soil deterioration. The other soil classifications have progressively greater natural limitations. Generally, the land with soil in Classes I and II is considered prime agricultural land. This land is highly productive because it requires little or no special treatment besides normal, good soil management.

Class III land is suitable for cultivated crops but requires additional attention to offset or overcome inherent soil limitations. Class IV soils are considered suitable for limited cultivation. The lands in Classes V, VI, and VII are best adapted to pasture or range, woodland, or wildlife habitat. Class VIII soils and landforms have severe limitations that preclude their use from crop production and restrict their use to recreation, wildlife habitat, water supply, or aesthetic purposes.

Placer County has a limited amount of Class I land; however, substantial amounts of Class II, III, and IV soils are located in the lower-lying lands west of Auburn. Soils east of Auburn are primarily Class VI, VII, and VIII soils, except for a pocket of Class III soils north and northeast of Foresthill. Soils east of Colfax and Foresthill primarily support timber growth. (Placer County 1973.)

The western half of Placer County has been mapped by the SCS (U.S. Soil Conservation Service 1980). The western half of Placer County consists of 12 soil mapping units. The 12 mapping units in the SCS soils survey area have been grouped into three physiographic regions: terraces and alluvial bottoms, foothills, and mountainous uplands.

Soils on terraces and alluvial bottoms consist of five mapping units and account for approximately 30 percent of the surveyed area. These soils are located on terraces and alluvial bottoms in the western one-third of the survey area. Elevations range from 50 to 250 feet, with 260-285 frost-free days during average years. These soils are some of the best in the county for crop production and support winter grains, annual range, irrigated pasture, rice, and orchards.

Soils on the foothills consist of three mapping units and account for approximately 36 percent of the survey area. These soils are located on undulating to very steep uplands in the central one-third of the survey area. Elevations range from 200 to 1,600 feet, with an average frost-free growing season of 230-270 days. These soils support annual range, irrigated pasture, and deciduous orchards.

Soils on mountainous uplands consist of four mapping units and account for about 34 percent of the surveyed area. These soils are located on undulating to very steep uplands in the eastern one-third of the survey area. Elevations range from 1,200 to 5,300 feet, with an average frost-free growing season ranging from 130 to 250 days. These soils are used mostly for timber production and, in a few areas, are used for irrigated pastures and orchards.

Construction-Related Soil Limitations

Physical and chemical properties of soils may limit construction-related uses of these soils. Construction related soil limitations can be extensive, but selected limitations include erosion hazards, hydrologic groups' shrink-swell potential, and risk of corrosion to concrete and uncoated steel. The construction-related limitations of soils in Placer County are shown in Table 9-4. This table describes the physical and chemical properties of soil associations and generalized construction-related limitations. The location of these soil associations in the county is shown in Figure 9-2.

Hydrologic soil groupings are distinguished by the amount of runoff that can be expected from unvegetated soils that have been wetted and have received precipitation from long-duration storms. Group A soils have a high infiltration water transmission rate. Group B soils have a moderate infiltration and water transmission rate. Group C soils have a slow infiltration and water transmission rate. Group D soils have a very slow infiltration and water transmission rate. The soils groups with slow and very slow infiltration would indicate the potential for site drainage problems.

Shrink-swell potential depends on the amount and kind of clay in the soil. Shrinking and swelling of soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indicates that special designs may be needed as part of building construction.

The risk of corrosion indicates soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion to steel is related to soil moisture, total acidity, and electrical conductivity of the soil material. The corrosion rate of concrete is based mainly on the sulfate content, texture, and acidity of the soil.

PLACER COUNTY GENERAL PLAN

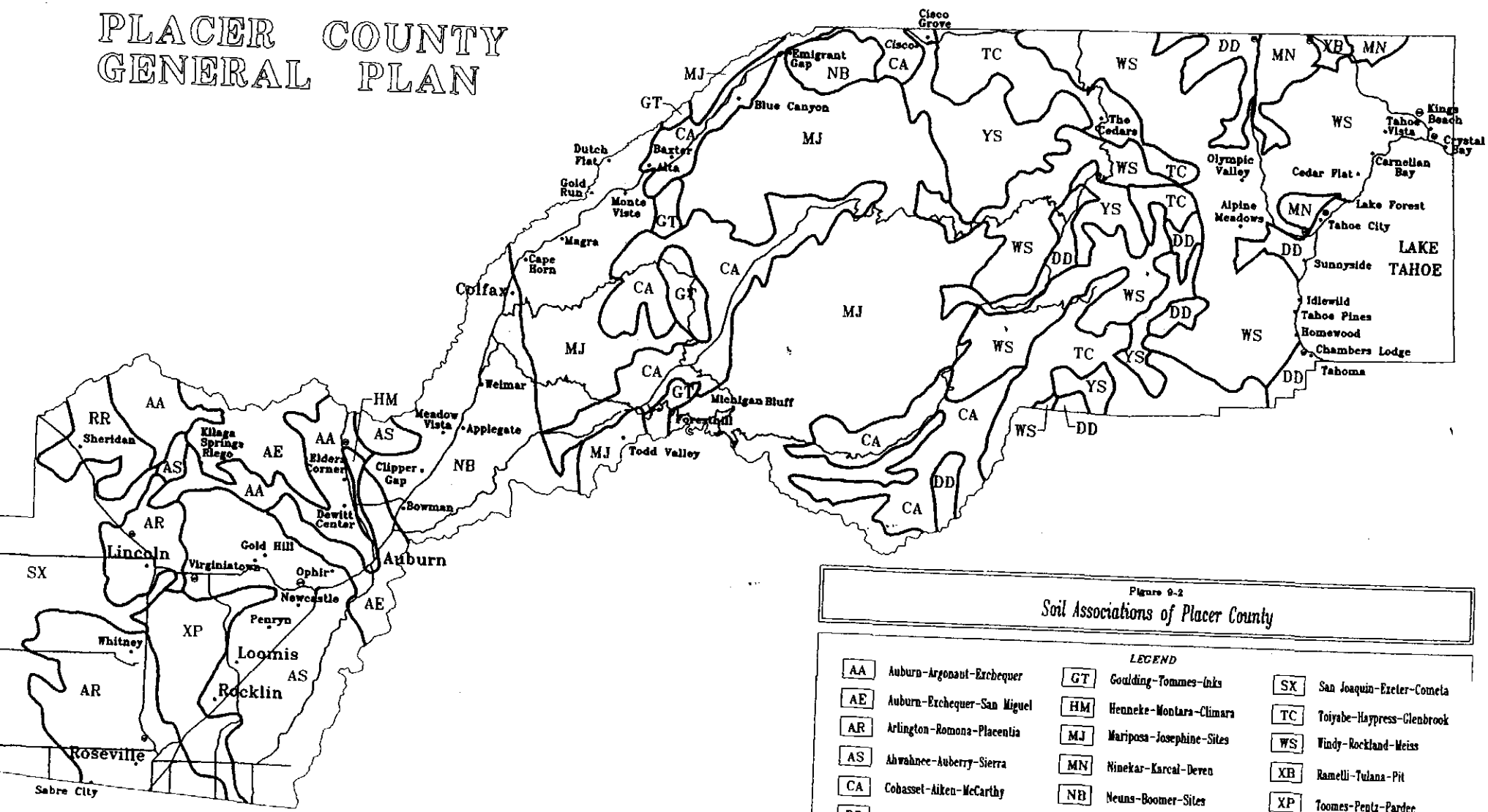


Figure 9-2

Soil Associations of Placer County

LEGEND

AA	Auburn-Argonaut-Exchequer	GT	Goulding-Tommes-Inks	SX	San Joaquin-Exeter-Cometa
AE	Auburn-Exchequer-San Miguel	HM	Henneke-Montara-Climara	TC	Toiyabe-Haypress-Glenbrook
AR	Arlington-Romona-Placentia	MJ	Mariposa-Josephine-Sites	WS	Windy-Rockland-Meiss
AS	Ahwahnee-Auberry-Sierra	MN	Ninekar-Karcal-Deven	XB	Ramelli-Tulana-Pit
CA	Cohasset-Aiken-McCarthy	NB	Neuns-Boomer-Sites	XP	Toomes-Pentz-Pardee
DD	Meeks-Tallac-Dinkey	RR	Redding-Red Bluff-Corning	YS	Yollabolly-Rockland-Kinkel

Note: Each area outlined on this map consists of more than one kind of soil. These soil associations are described in table 9-4. More detailed soil surveys are available which describe individual soils and their locations at larger mapping scales. These soil surveys and site-specific soils reports should be consulted as a basis for decisions concerning specific tracts.

Source: U.S. Soil Conservation Service, 1978, scale 1:267,000.

Scale 1" = 30,000'

Date: 8/14/92

Prepared by:

Jones & Stokes Assoc.

The degree of soil limitation is expressed as slight, moderate, or severe. Slight limitation indicates soils that are generally favorable for the specified use. Moderate limitation indicates that limitations, although unfavorable, can be overcome by special planning and design. Severe limitations indicate that construction limitations are unfavorable or difficult to overcome.

As shown in Table 9-4, almost all soil associations in Placer County would be expected to have severe limitations for dwellings without basements, small commercial buildings, local roads and streets, and septic tank absorption fields. These construction-related limitations can, however, be quite localized. Any site development proposals should be subject to detailed site-specific soil and geotechnical studies to determine the extent of any construction limitations.

TABLE 9-4

SOIL ASSOCIATIONS OF PLACER COUNTY AND SELECTED CONSTRUCTION-RELATED SOIL LIMITATIONS

Map Unit*	Physical and Chemical Properties of Soils					Soil Limitations to Building Site Development			
	Erosion Hazard	Hydrologic Group**	Shrink-Swell Potential	Risk of Corrosion to Concrete	Risk of Corrosion to Uncoated Steel	Dwellings w/o Basements	Small Commercial Buildings	Local Roads And Streets	Septic Tank Absorbtion Fields
AA	Moderate	C/D	Low/Moderate	Moderate	Moderate	Severe	Severe	Severe	Severe
AE	Moderate	C/D	Low	Moderate	Low/Moderate	Severe	Severe	Severe	Severe
AR	Moderate	B	Low/Moderate	Moderate	Moderate	Slight	Slight/Moderate	Slight/Moderate	Moderate/Severe
AS	Moderate	C	Low/Moderate	Low/Moderate	Low/Moderate	Severe	Severe	Severe	Severe
CA	Moderate	B	Moderate	Moderate	Moderate	Severe	Severe	Severe	Severe
DD	Low	C/D	Low	Low/Moderate	Low/Moderate	Severe	Severe	Severe	Severe
GT	Moderate	D	High	Moderate	Moderate	Severe	Severe	Severe	Severe
HM	Moderate/High	D	Moderate	Moderate	High	Severe	Severe	Severe	Severe
MJ	Moderate	C	Low/Moderate	High	High	Severe	Severe	Severe	Severe
MN	Moderate	C	High	ND	ND	Severe	Severe	Severe	Severe
NB	Moderate	B	Low/Moderate	Moderate	High	Severe	Severe	Severe	Severe
RR	Moderate	D	Moderate	Moderate/High	High	Severe	Severe	Severe	Severe
SX	Low	D	High	Moderate	High	Severe	Severe	Severe	Severe
TC	Low/Moderate	B/C	low	ND	ND	Severe	Severe	Severe	Severe
WS	Moderate/High	C/D	Low	ND	ND	Severe	Severe	Severe	Severe
XB	Slight/Low	D	High	High	High	Severe	Severe	Severe	Severe
XP	Moderate	C/D	Moderate/High	Low/Moderate	Low/Moderate	Severe	Severe	Severe	Severe
YS	High	D	Low	ND	ND	Severe	Severe	Severe	Severe

Note: ND = no data.
* Map units are shown in Figure 9-2.
** B = soils having a moderate infiltration rate when thoroughly wet.
** C = soils having a slow infiltration rate when thoroughly wet.
** D = soils having a very slow infiltration rate when thoroughly wet.

Source: U.S. Soil Conservation Service 1964, 1974, 1975, 1980, 1991.

Important Farmlands

The California Department of Conservation (CDC) supplements the SCS soil survey with its Important Farmland Mapping and Monitoring Program. This ongoing program uses soil and land use data to prepare and update maps designating important farmlands and to monitor conversion of agricultural land within the state.

The general distribution of important farmland in Placer County is shown in Figure 9-3. Some farmland categories have been combined to simplify the map. Because the map is based on the SCS soil survey, only the western half of the county is mapped.

The important farmland mapping program identifies five categories of farmlands: Prime Farmlands, Farmlands of Statewide Importance, Unique Farmlands, Farmlands of Local Importance, and Grazing Lands. CDC defines these five categories as follows:

- Prime Farmland is land which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops within the last three years. None of the farmland categories include publicly-owned lands for which there is an adopted policy preventing agricultural use.

- Farmland of Statewide Importance is land other than Prime Farmland which has a good combination of physical and chemical characteristics for the production of crops. It must have been used for the production of irrigated crops within the last three years.

- Unique Farmland is land which does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but is currently used for the production of specific high economic value crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. Examples of such crops may include oranges, olives, avocados, rice, grapes, and cut flowers.

- Farmland of Local Importance is either currently producing crops, or has the capability of production. Farmland of Local Importance is land other than Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. This land may be important to the local economy due to its productivity.

- Grazing Land is defined as land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock. The minimum mapping unit for Grazing Land is 40 acres.

As shown in Table 9-5, 21 percent of the county has been identified as agricultural land, with more than half of the agricultural land categorized as Farmland of Local Importance. Less than 2 percent of the county has been identified as Prime Farmland and Farmland of Statewide Importance, the classes most suited to crop production. These farmlands are located primarily east and west of the Highway 65 corridor. Most of the remaining farmlands at lower elevations are categorized as Unique Farmland or Farmland of Local Importance (Figure 9-3).

TABLE 9-5

PLACER COUNTY IMPORTANT FARMLANDS, 1988

Mapping Category	Percentage of Acreage Mapped	County Area (acres)
Agricultural Land		
Prime farmland	1.1	10,480
Farmland of statewide importance	0.6	5,380
Unique farmland	2.5	23,838
Farmland of local importance	11.5	110,564
Grazing land	5.7	54,940
Total agricultural land	21.3	205,202
Urban built-up land	2.8	27,152
Other land	18.0	173,979
Water area	0.5	5,292
County area not inventoried	57.3	552,515
Total county area	**100.0**	**964,140**

Source: California Department of Conservation 1990a.

AGRICULTURE

Agricultural Production

Before its rapid population growth in the 1970s and 1980s, Placer County was known as an agricultural and timber-producing county. Agriculture and timber production are still important sectors of the county's economy; however, manufacturing, recreation, and service industries have increased in economic importance. Harvested agricultural acreage decreased from 274,600 acres in 1980 to 250,000 acres in 1990, representing a 9 percent decrease in harvested acreage (Table 9-6). Accompanying the decline in harvested acreage, the production of hay, rice, peaches, pears, and plums also decreased between 1980 and 1990. The value of agricultural production remained relatively stable at approximately $55 million between 1980 and 1990 (Table 9-7); however, in dollars adjusted for inflation, the value of the county's agricultural output has substantially declined. One the other hand, timber production increased during the 1980s, with the value of the county's timber harvest rising from approximately $11 million in 1980 to $34 million in 1990 (Table 9-7).

TABLE 9-6

AGRICULTURAL PRODUCTION AND LAND USE IN PLACER COUNTY
1980 AND 1990
(In Tons)

Crop Type	Harvested Acreage		Total Production	
	1980	1990	1980	1990
Field crops				
Hay, grain	4,300	3,600	9,100	5,400
Hay, other	3,250	3,400	7,280	7,650
Irrigated pasture (in acres)	26,800	26,900	26,800	26,900
Pasture, other (in acres)	220,000	202,000	220,000	202,000
Rice	17,400	12,200	53,600	48,200
Fruit and nut crops				
Apples	49	73	346	416
Grapes	196	93	270	247
Kiwi	16	46	100	223
Oranges, mandarins	30	50	240	229
Peaches	142	80	540	392
Pears, bartlett	620	60	2,517	79
Pears, others	20	55	226	264
Persimmons	25	14	233	118
Plums	1,134	700	3,330	1,295
Walnuts	602	1,030	738	1,250
Total harvested acres	**274,584**	**250,301**		

Note: The totals shown above exclude miscellaneous field, fruit, and nut crops. Miscellaneous field crops include alfalfa hay, barley, clover seed, corn silage, oats, straw, sudan hay and seed, and wheat. Miscellaneous fruit and nut crops include almonds, cherries, naval oranges, nectarines, olives, pistachios, prunes, and quince.

Source: Placer County Department of Agriculture 1981, 1991.

TABLE 9-7

VALUE OF AGRICULTURAL AND TIMBER PRODUCTION IN PLACER COUNTY 1980 and 1990

Product	Gross Value of Production	
	1980	1990
Fruit and nut crops	$5,097,600	$5,178,000
Field crops	18,642,500	12,164,000
Livestock and poultry	22,234,000	23,610,000
Livestock and poultry products	5,360,500	4,578,000
Nursery products	2,734,000	9,979,000
Apiary products	385,600	481,900
Timber harvest	11,424,000	33,650,000
Total	**$65,878,200**	**$89,640,900**

Note: Livestock and poultry products include wool, milk, and eggs.

Source: Placer County Department of Agriculture 1981, 1991.

Agricultural production in Placer County primarily is field crops and fruit and nut crops. Figure 9-3 provides an indication of the location of crops grown in the county. The following general relationships between elevation and agricultural uses exist in the county (Placer County 1973).

Elevation	Predominant Agricultural Uses
100-300 feet	Rice, pasture, grain, bird farms
300-1,000 feet	Pasture, plums, pears, bird farms
1,000-2,000 feet	Plums, pears, citrus, livestock, pasture, Christmas trees, bird farms
2,000-3,500 feet	Apples, pears, walnuts, timber, Christmas trees
3,500-6,000 feet	Timber, livestock, grazing, Christmas trees

As shown in Table 9-6, field crops account for the vast majority of the 250,300 acres harvested in Placer County in 1990. Approximately 202,000 acres, or 80 percent of the county's harvested acreage, consisted of unirrigated pasture in 1990. The remaining acreage was used for hay, irrigated pasture, rice, and fruit and nut crops. Plums, walnuts, and Bartlett pears dominate planted acreage in fruit and nut crops.

The value of agricultural production is summarized in Table 9-7. Excluding timber production, the value of agricultural production in Placer County totalled approximately $56.0 million in 1990, up slightly from $54.4 million in 1980. Livestock and poultry production accounted for $23.6 million in 1990, or 42 percent of total agricultural production value. Field crops and nursery products accounted for $22.1 million, or 40 percent of total agricultural production.

PLACER COUNTY GENERAL PLAN

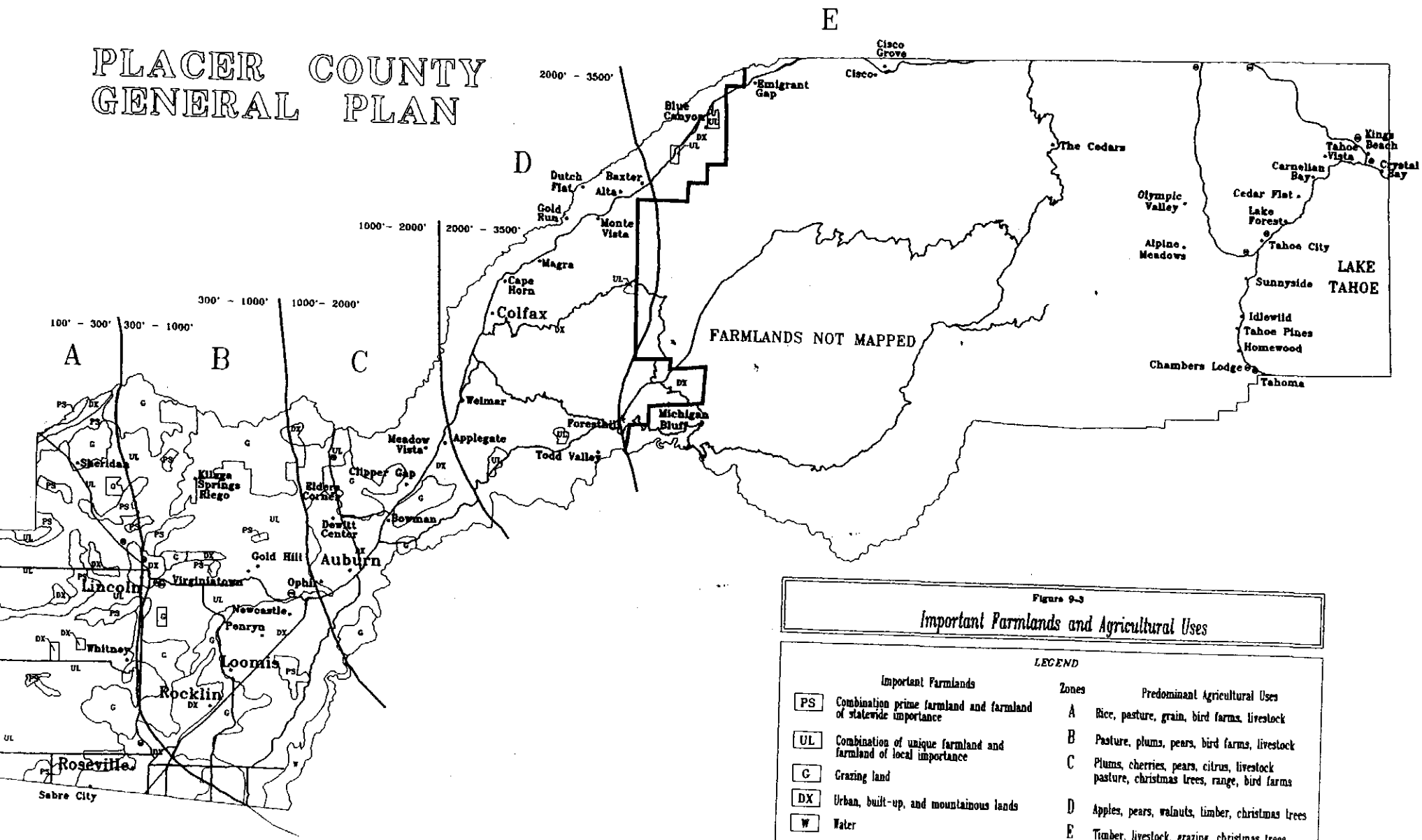


Figure 9-3

Important Farmlands and Agricultural Uses

LEGEND

Important Farmlands		Zones	Predominant Agricultural Uses
PS	Combination prime farmland and farmland of statewide importance	A	Rice, pasture, grain, bird farms, livestock
UL	Combination of unique farmland and farmland of local importance	B	Pasture, plums, pears, bird farms, livestock
G	Grazing land	C	Plums, cherries, pears, citrus, livestock pasture, christmas trees, range, bird farms
DX	Urban, built-up, and mountainous lands	D	Apples, pears, walnuts, timber, christmas trees
W	Water	E	Timber, livestock, grazing, christmas trees

Source: US Soil Conservation Service 1980; California Department of Conservation 1988; Placer County Planning Department 1973

Scale 1" = 30,000'

Date: 8/14/92

Prepared by:
Jones & Stokes Assoc.

Timber production in Placer County generated approximately $33.6 million in 1990, a 195 percent increase over the value of production in 1989. The county's timber harvest accounted for 37 percent of the $89.6 million in total agricultural and timber production value in 1990.

EXISTING SOIL AND AGRICULTURAL RESOURCE MANAGEMENT PLANS

Open Space and Conservation Plan

Placer County adopted an Open Space and Conservation Plan in 1973. The plan's recommendations for the County are to preserve and protect agricultural operations, direct urbanization to areas least suited for agricultural production, and continue support of the agricultural preserve program (Placer County Planning Department 1973).

Placer County Agricultural Study

Placer County completed a study of agriculture in the county in 1987. The study's results identify production trends and agricultural policies and make recommendations designed to support continued agricultural production. The study recommends that an agricultural element for the County's general plan be developed, that the identification of a minimum parcel size would support viable agricultural operations, that adequate supplies of water be provided, and that the adoption of development standards for lands adjacent to agricultural uses be implemented. (Placer County Planning Department 1987.)

Agricultural Element

Placer County adopted an agricultural element as part of its general plan in 1989. The agricultural element expressed the County's policies regarding its 650,000 acres of designated agricultural and timber croplands. The general purpose of the agricultural element was to establish policies that will improve the viability of agricultural operations and promote the conservation of agricultural land (Placer County Board of Supervisors 1989.)

A variety of goals, policies, and implementation programs were included in the element to deal with different agricultural and timber regions within the county. The primary goals of the agricultural element were to provide long-term conservation and use of agricultural land for compatible uses, reduce existing or potential conflicting uses, provide adequate supplies of water, and improve the financial viability of the agricultural sector. Implementation of many of the policies are made through the ongoing project approval process. The Agricultural Element was superseded by the adoption of the Countywide General Plan Policy Document. Section 7 of this document provides agriculture and forestry resource policies and programs.

Williamson Act Lands

The California Land Conservation Act, better known as the Williamson Act, was enacted by the state legislature in 1965 to encourage the preservation of agricultural lands. The program established by the Williamson Act permits property tax adjustments for those landowners who contract with a city or county to keep their lands in agricultural production for a minimum of 10 years. Lands covered by Williamson Act contracts are assessed based on their agricultural value instead of their potential market value under nonagricultural uses.

In 1987, approximately 86,400 acres of farmland in Placer County was included under 317 Williamson Act contracts (Placer County Planning Department 1987). Most of this land is located in the western one-third of the county, as shown in Figure 9-4.

The amount of land protected by Williamson Act contracts has been declining in recent years because of the nonrenewal of Williamson Act contracts covering lands with development potential. Once a notice of nonrenewal has been filed by a landowner, contract restrictions on the use of the land are removed following a 10-year nonrenewal period. In 1987, 73 contracts covering 18,800 acres, or 22 percent of the land under contract, were in the nonrenewal process in Placer County. Lands currently in nonrenewal status are shown by Figure 9-4.

According to the California Department of Conservation (1990), Williamson Act acreage in Placer County declined by approximately 6,500 acres between 1985-86 and 1988-89. According to the department, acreage in the nonrenewal process increased to 20,600 acres by 1989.

Timber Preserve Zoning

Timber croplands represent approximately 33 percent of land within Placer County (Placer County 1973). Most of the timber croplands and lands under Timberland Preserve Zone (TPZs) are located east of Foresthill (Figure 9-4).

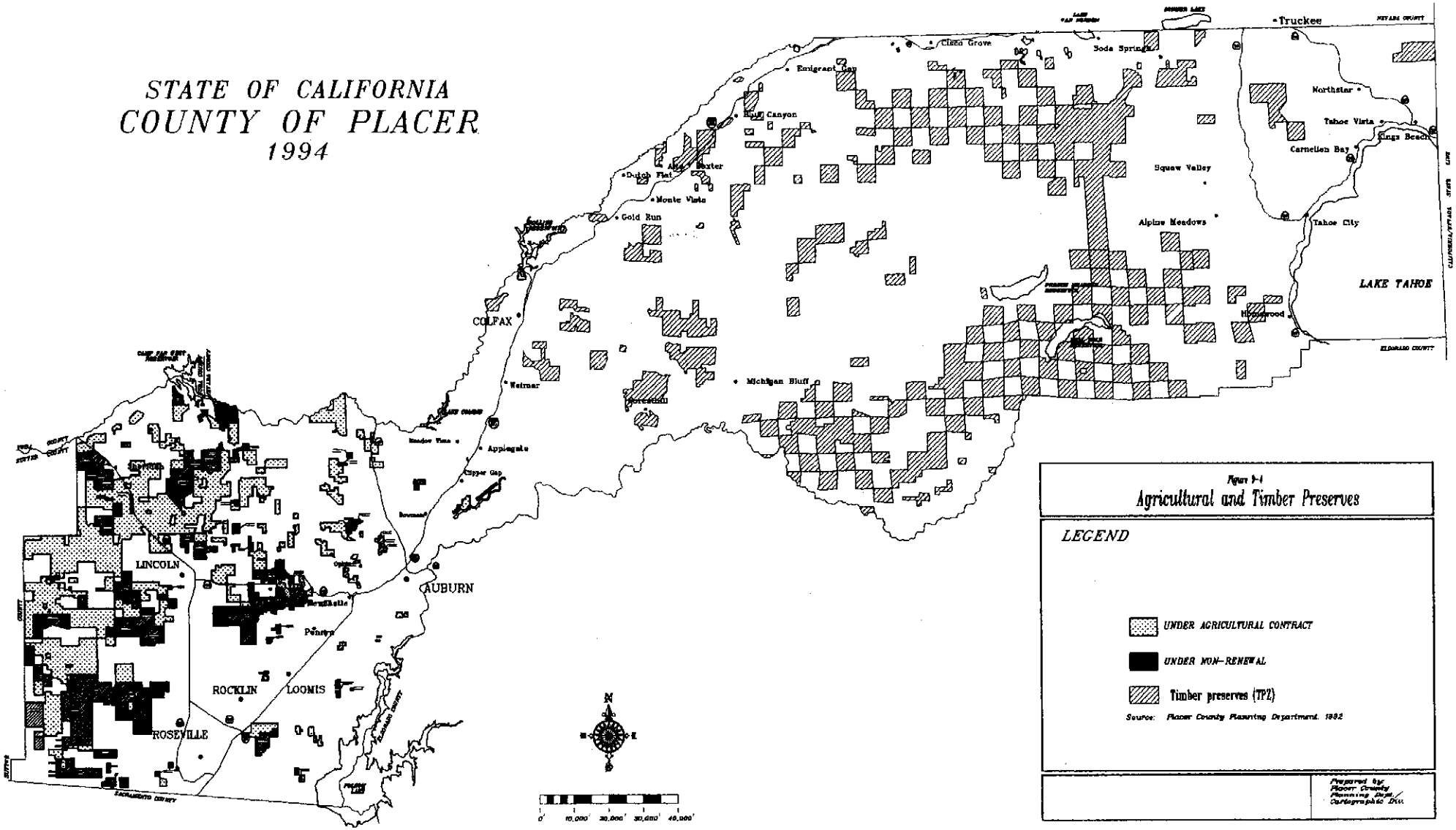
The Forest Taxation Reform Act of 1976 requires nonfederal timber-producing lands to be classified by county ordinances into TPZs through a process involving the county assessor, the county planning commission, and timber owners. Lands in TPZs may be used for growing forest products and compatible uses only, and the usual property taxes on TPZ lands are based on those limited uses. The land is subject to the usual county property tax, and the trees on land within a TPZ are not subject to taxation until harvested. A special timber yield tax is applied during harvest based on the market value of harvested trees.

In 1986, Placer County contained approximately 423,000 acres of commercial forestland. Of this total, approximately 126,000 acres was included in TPZs (California Department of Finance 1990). The current locations of lands under TPZs in Placer County are shown in Figure 9-4. Much of the commercial forestland in the county is under public ownership; approximately 56 percent of the county's commercial forestland is under the jurisdiction of the U.S. Forest Service. Forty-one percent of commercial forestland is under private ownership. Timber production in Placer County accounted for 2.7 percent of timber production (119.7 million board feet) in California in 1989. (California Department of Finance 1990.)

9.4 BIOLOGICAL RESOURCES

This chapter provides an overview of the vegetation and wildlife resources in Placer County. Common species of plants and wildlife are identified and described under natural groupings called communities. Communities represent groups of different species that interact and are generally adapted to similar physical features, such as soils and weather patterns.

Descriptions of biological communities are based on the Wildlife Habitat Relationships (WHR) descriptions (Mayer and Laudenslayer 1988), except for some rare natural communities that follow the descriptions of Holland (1986). Wildlife habitat associations followed Verner and Boss (1980) and Zeiner et al. (1990). Biological communities are shown as WHR vegetation types in Figure 9-5.


STATE OF CALIFORNIA
COUNTY OF PLACER
1994
Truckee
Soda Springs
Cisco Grove
Emigrant Gap
Blue Canyon
Dutch Flat
Alta
Baxter
Monte Vista
Gold Run
Northstar
Tahoe Vista
Kings Beach
Carnelian Bay
Squaw Valley
Alpine Meadows
Tahoe City
LAKE TAHOE
Homewood
COLFAX
Weimar
Michigan Bluff
Meadow Vista
Applegate
Clipper Gap
Newcastle
Penryn
LINCOLN
AUBURN
ROCKLIN
LOOMIS
ROSEVILLE
Figure 1-1
Agricultural and Timber Preserves
LEGEND
UNDER AGRICULTURAL CONTRACT
UNDER NON-RENEWAL
Timber preserves (TPZ)
Source: Placer County Planning Department, 1992
Prepared by: Placer County Planning Dept. Cartographic Div.

PLACER COUNTY GENERAL PLAN

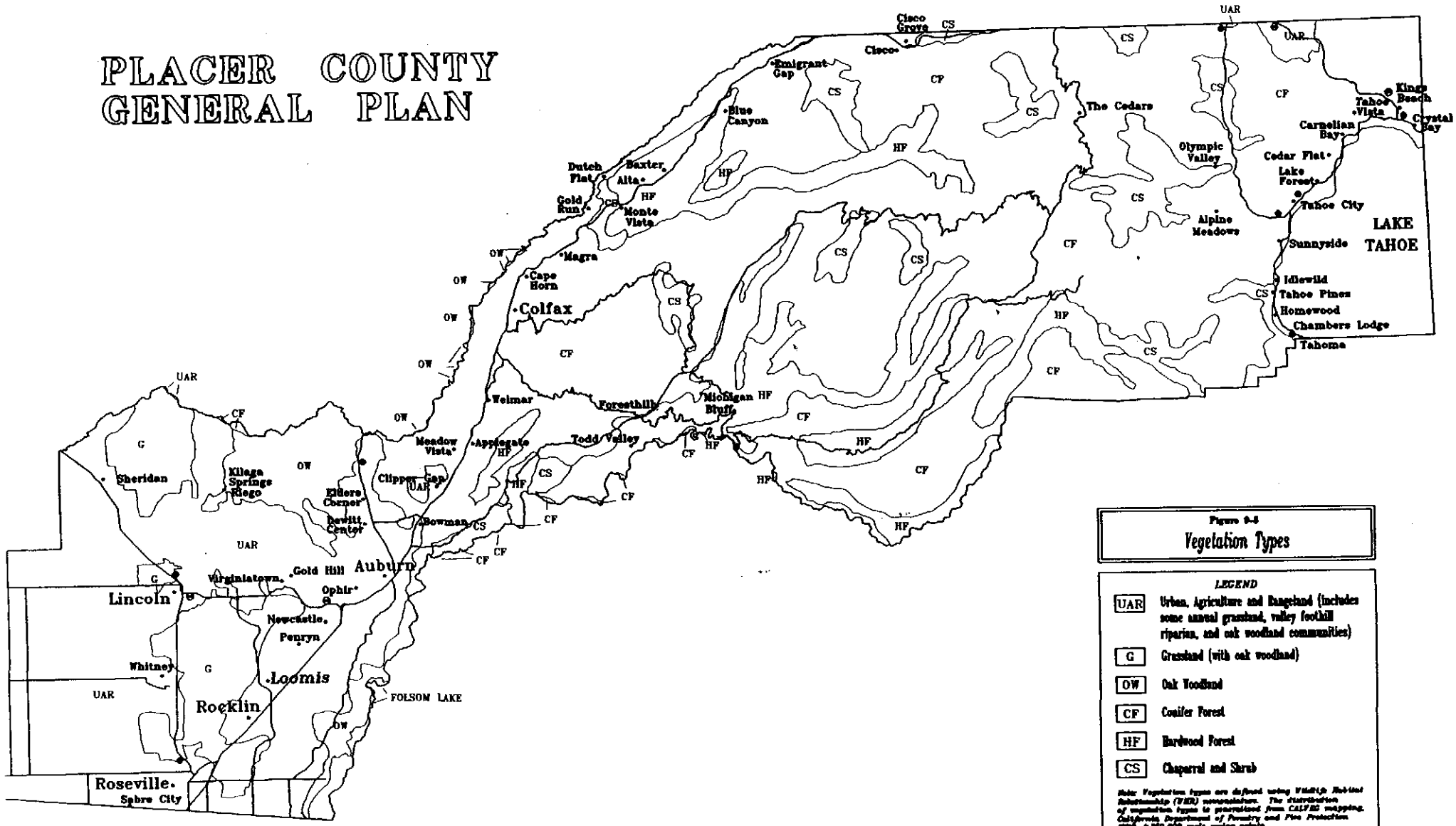


Figure 9-5

Vegetation Types

LEGEND

UAR	Urban, Agriculture and Rangeland (includes some annual grassland, valley foothill riparian, and oak woodland communities)
G	Grassland (with oak woodland)
OW	Oak Woodland
CF	Conifer Forest
HF	Hardwood Forest
CS	Chaparral and Shrub

Note: Vegetation types are defined using WHR(A Habitat Relationship (WHR) nomenclature. The distribution of vegetation types is generalized from CALFRE mapping. California Department of Forestry and Fire Protection 1978. 1:250,000 scale raster prints.

Scale 1" = 80,000'

Date: 8/14/92

Prepared by:
Jones & Stokes Assoc.

Following the descriptions of communities, biological resources that have regulatory status or are of special concern to regulatory agencies, such as threatened or endangered species; rare natural plant communities; wetlands; and significant natural areas are discussed. These community descriptions are summaries of the WHR community descriptions (Mayer and Laudenslayer 1988). The more detailed WHR community descriptions are contained in separatelly published technical appendix. The distribution of these special-status resources is described according to the communities in which they occur. The chapter is summarized with a series of findings that identify important issues regarding biological resources in Placer County. Common and scientific names of wildlife and plants mentioned in the text are contained in Appendix 9-A and 9-B respectively.

GRASSLAND COMMUNITIES

Grasslands with native perennial bunch grasses were once common in the Central Valley portions of Placer County. This habitat, however, largely has been converted to agricultural or urban areas, except for areas near Sheridan, Lincoln, and Rocklin (Figure 9-5) where the existing grasslands now are dominated by annual species introduced by early European explorers and settlers.

Common plants in grasslands include wild oats, ripgut brome, California poppy, lupines, and clovers. Widely-spaced oaks, forming savannahs, are also common in grasslands. Common wildlife species in grasslands include the California ground squirrel, Botta's pocket gopher, mourning dove, horned lark, and western meadowlark.

CHAPARRAL AND SHRUB COMMUNITIES

Chaparral and shrub communities are characterized by woody evergreen plants with thick, stiff leaves. These communities extend from the lower elevation foothills to the crest of the Sierra Nevada (Figure 9-5). Four chaparral and shrub communities occur in the county, each adapted to different soil types, precipitation patterns, elevation, and fire history.

Chamise Chaparral

Pure stands of chamise are present on dry, south-facing slopes below the 4,000-foot elevation. This habitat is adapted to the hot, dry summers and quickly resprouts after wildfires. During the first 3 years after a fire, grasses are generally abundant; as the individual chamise plants grow taller and their canopy closes, the grasses are excluded and the understory becomes mostly bare ground, until the next fire.

Mixed Chaparral

Mixed chaparral generally is present in the foothills on wet or north-facing slopes or at higher elevations compared to chamise chaparral. This habitat also is adapted to wildfires and has a wide variety of shrubs, including ceanothus, manzanita, scrub oak, and California buckeye. Wildlife species that commonly are present in chamise and mixed chaparral include western rattlesnake, California thrasher, California quail, gray fox, and mule deer.

Montane Chaparral

Montane chaparral generally is present at higher elevations than chamise or mixed chaparral and often is associated with conifer forests up to the 9,000-foot elevation. Shrubs from this habitat may be scattered individuals in forests or in dense thickets where forests have been disturbed because of avalanches, fires, or logging. Common plants include mountain whitethorn, greenleaf manzanita, deer brush, and snowbush. This habitat provides important foraging habitat for migratory deer; other common wildlife species using this habitat include orange-crowned warbler, rufus-sided towee, brush rabbit, and dusky-footed woodrat.

Alpine Dwarf-Shrub

Alpine dwarf-shrub is present above the 8,500-foot elevation around Lake Tahoe. The prostrate plants are adapted to the thin, rocky soils and short growing seasons at these high elevations. Common plants include pussypaws, Sierra primrose, Davidson's penstemon, and Indian paintbrush. Common wildlife species using this habitat include blue grouse, Belding's ground squirrel, alpine chipmunk, and yellow-bellied marmot.

WOODLAND COMMUNITIES

Woodland communities are generally characterized by moderately spaced stands of oak trees with an understory of grasses or shrubs. Woodlands occur on well-drained soils in the western half of the county along the Bear and American Rivers (Figure 9-5). Woodlands in Placer County include valley oak woodland, blue oak woodland, and blue oak-digger pine woodlands. These habitats provide important habitat for wildlife because they are structurally complex and diverse; they occur at lower elevations where temperatures are mild; and they produce acorns, which are used by approximately 15 percent of all wildlife species in California (California Department of Forestry and Fire Protection 1988). Common species of wildlife in woodlands include California quail, band-tailed pigeons, scrub jay, acorn woodpeckers, yellow-billed magpie, wild turkey, California ground squirrel, western gray squirrel, mule deer, bobcat, and gray fox.

Valley Oak Woodland

Valley oak woodlands are present on deep alluvial soils of valley floodplains. The community varies from open savannas to dense forest-like stands of valley oaks with understories of annual grasses and herbaceous plants.

Blue Oak Woodland

Blue oak woodlands are present on shallow, rocky, and infertile soils along the Sierra foothills. Blue oaks can form a savanna with an understory of annual grasses or be associated with an understory of shrubs, such as poison oak, California coffeeberry, or buckbrush.

Blue Oak-Digger Pine Woodland

Blue oak-digger pine woodlands are dominated by the deciduous blue oak and the evergreen digger pine and are more widely distributed than blue oak woodlands in Placer County. The understory is commonly a mixture of annual grasses and shrubs, similar to those in blue oak woodlands.

HARDWOOD FOREST COMMUNITIES

Hardwood forests are dominated by broad-leaved deciduous and evergreen tree species; however, some may include conifer trees. Hardwood forest communities include the montane hardwood and montane hardwood-confer forests along drainages of the major rivers and streams at middle elevations on the west slope of the Sierra Nevada and aspen forests at high elevations (Figure 9-5). Common species of wildlife associated with montane hardwood and montane hardwood-conifer forests are generally similar to those described for woodlands and conifer forests. Common species of wildlife associated with aspen forests include beavers, raccoons, mountain bluebirds, Williamson's sapsuckers, downy woodpeckers, and mountain chickadees.

Montane Hardwood Forest

Montane hardwood forests are comprised of a mixture of trees that occur on rocky, poorly developed, and well-drained soils associated with the slopes of major river canyons. At low elevations, common species include canyon live oak, digger pine, tan oak, Pacific madrone, and California bay. Black oak and Douglas-fir trees may occur at high elevations. Common shrubs in the montane hardwood forests include wood rose, snowberry, manzanita, and poison oak.

Montane Hardwood-Conifer Forest

Montane hardwood-conifer forests include components of conifer forests and hardwood forests. Montane hardwood-conifer forest is transitional between the montane hardwood, mixed chaparral, and woodlands of low elevation and the conifer forests of high elevations. Common associates include California black oak, ponderosa pine, Douglas-fir, white fir, and incense-cedar.

Aspen Forest

Aspen forests are associated with seeps, streams, or meadows in high elevation conifer forests. These deciduous trees provide brilliant shades of yellow and orange during fall. Commonly associated tree species include willows, alders, black cottonwood, lodgepole pine, Jeffrey pine, and red fir; common shrub species include wood rose, snowberry, western chokecherry and serviceberry.

CONIFER FOREST COMMUNITIES

Conifer forest communities form the dominant vegetation type above the 2,500-foot elevation in Placer County (Figure 9-5). These forests cover valuable watersheds that yield water for domestic and agricultural use, provide timber for commercial logging, and provide extensive recreation opportunities. Because of the large area covered by these forests and range of environmental factors affecting this area, eight distinct types of conifer forest are described in Placer County.

Common species of wildlife associated with conifer forests include Pacific tree frog, California mountain king snake, dark-eyed junco, Stellar's jay, mountain chickadee, pygmy nuthatch, golden mantled ground squirrel, Allen's chipmunk, Douglas squirrel, mule deer, black bear, and mountain lion.

Ponderosa Pine Forest

Ponderosa pine forests are present above the montane hardwood-conifer forests and below the Sierran mixed conifer forests. These forests are present as open, park-like forests of ponderosa pine or as dense forests associated with other species, such as white fir, Douglas-fir, or sugar pine.

Sierran Mixed Conifer Forest

Sierran mixed conifer forest is present in the central portion of Placer County, at 2,500- to 4,000-foot elevation, on a variety of soil types. Several trees commonly present in this forest are Douglas-fir, ponderosa pine, incense cedar, white fir, oak, and California black oak. Common shrub species are deerbrush, manzanita, chinquapin oak, squawcarpet, mountain whitethorn, Sierra gooseberry, and mountain misery.

White Fir Forest

White fir forests are present above 5,000-foot elevation, between Sierran mixed conifer and red fir forests. These forests generally grow on coarse, well-drained soils on cool north- and east-facing slopes. White fir trees do not have a long life span, compared to other conifer trees in Placer County, and frequently contract diseases that weaken the trees. The tops and large limbs of weakened trees frequently break and fall, resulting in snags and cavities, which provide important nesting habitat for cavity-nesting species of wildlife such as the pygmy nuthatch, red-breasted nuthatch, pileated woodpecker, and hairy woodpecker.

Lodgepole Pine Forest

Lodgepole pine forests typically are present above 5,900-foot elevation on sites with at least seasonally wet soils or associated with wet meadows or streams. These forests are characterized by stands of similarly sized trees and a sparse understory. The diversity of wildlife species is low in lodgepole pine forests because of the low diversity of tree and shrub species and the even-aged characteristics of these forested stands.

Red Fir Forest

Red fir-dominated forests are present between the 6,000- and 9,000-foot elevation on frigid soils. Few other tree species grow in mature red fir forests because of the shading and thick layer of needles on the forest floor. Small pockets of lodgepole pine or aspen trees may be present near wet meadows or riparian areas that commonly are present in red fir forests.

Subalpine Conifer Forest

Subalpine conifer forests are present at high elevations (9,000-11,000 feet) in Placer County on dry, thin, well-drained soils that contain a large percentage of sand, gravel, volcanic debris, and rocks. Subalpine conifer forests are dominated by one or more of the following species: lodgepole pine, mountain hemlock, red fir, or foxtail pine. The trees are usually low to medium stature because of the poor soils, heavy snow, and strong winds associated with these high elevations. The harsh environment and low diversity of plants also result in a low diversity of wildlife occupying subalpine forests.

Jeffrey Pine Forest

Jeffrey pine forests are limited to the crest of the Sierra Nevada in the northeast corner of the county. Wildfires may be important for reducing fire hazards and increasing seedling establishment in these forests.

Eastside Pine Forest

Eastside pine forests are present east of the Sierran crest extending to the California-Nevada border. Ponderosa pines, the dominant trees, are similar-sized trees in dense patches or open stands. The understory is generally big sagebrush, rubber rabbitbrush, and bitterbrush.

RIPARIAN COMMUNITIES

Riparian communities are present along all watercourses and are one of the most important wildlife habitats in California. Riparian vegetation has received considerable attention during the last two decades. An awareness of this habitat's scarcity and special management needs fostered the development of public laws and policies that recognize the significance of riparian resources. Many counties have specific general plan policies that ensure proper riparian protection and management (e.g., San Joaquin County 1975, Sacramento County 1982). In Placer County, an open space task force will be working on a policy for mitigating riparian habitat loss.

Statewide concern for wetlands, including riparian vegetation, prompted the California legislature to require the California Department of Fish and Game (DFG) to prepare a report documenting methods that could be used to increase by 50 percent the area of state wetlands by 2000 (Senate Resolution 28, Resolution Chapter 92, September 13, 1979). Further evidence of this concern is shown by DFG's draft model ordinance for use by local and county planning staffs.

DFG promotes the protection of riparian vegetation on projects it proposes or reviews. In addition, the U.S. Fish and Wildlife Service mitigation policy (1981) includes riparian habitats in Resource Category 1, a category requiring the most stringent mitigation, for which no net loss of existing habitat value is recommended.

Riparian habitats warrant special consideration because:

- few examples are remaining, and these are under pressure for vegetation conversion (because of their rarity and continued threats of further elimination, the Natural Diversity Data Base (NDDB) monitors riparian habitats);
- a large number of plant and animal species are dependent on them;
- they help maintain water quality by filtering out pollutants and protect riverine habitats by forming a buffer between the river and developed uplands; and
- riparian vegetation helps stabilize riverbanks and reduce the severity of floods.

The diverse plants in the valley foothill riparian forest result in diverse wildlife that are present in this habitat. This habitat provides escape cover, forage, and nesting cover for a variety of wildlife, including Bewick's wren, bushtit, red-shouldered hawk, wood duck, great blue heron and black-crowned night heron. Mammals that occupy this habitat include ringtail, striped skunk, raccoon, long-tailed weasel, and

gray fox. These riparian habitats also provide dispersal and travel corridors for wildlife, including mule deer, coyotes, and mountain lion.

Valley Foothill Riparian Forest

Valley foothill riparian forests are located in the Central Valley and Sierra Nevada foothills in western Placer County. The community is generally associated with slow-moving streams that flow through valleys and rolling hills.

Dominant tree species are Fremont's cottonwood, California sycamore, and valley oak. The understory typically consists of a shrub and herbaceous layer. Common shrubs include wild rose, California blackberry, blue elderberry, poison oak, and willows. The herbaceous layer consists of sedges, rushes, grasses, miner's lettuce, and hoary nettle.

Montane Riparian Forest

Montane riparian forests are present in the Sierra Nevada below the 8,000-foot elevation and are associated with shallow lakes and ponds, seeps and meadows, and rivers and streams. Common plants include white alder, aspen, black cottonwood, dogwood, willows, and wild azalea. In the Tahoe Basin and portions of the Truckee River corridor, this habitat is specifically protected from development through the applicatoin of Stream Enviroment Zone regulations administered by the Tahoe Regional Planning Agency and the Lahontan Regional Board of the Regional Water Quality Control Board.

DEVELOPED LANDS

Developed lands include all lands that do not support native communities or vegetation. These artificial habitats are agriculture and rangelands and urban lands.

Agriculture and Rangeland

Agriculture and rangeland includes annual grasslands, pasture, cropland, and orchard types on flat to gently rolling terrain. The lands extend from the Roseville, Lincoln, Loomis, and Rocklin areas to Penryn and Auburn.

Agriculture croplands generally provide low habitat diversity and are frequently manipulated during harvesting; therefore, they provide limited habitat value for wildlife. Common rodents are prey for red-tailed hawks and northern harriers, and ring-necked pheasants may be present in some fields.

Undeveloped rangelands provide important habitat for wildlife, particularly where water has been developed. Wildlife species in this habitat are similar to those in grasslands and woodlands.

Urban

Urban vegetation includes landscaping strips along transportation corridors, shade trees and lawns, lawns, and shrub cover. The structure of the community varies with each of the above vegetation types. Urban vegetation is common throughout developed areas, particularly at residences and parks.

Urban vegetation provides habitat for wildlife that are tolerant of human disturbance. Birds and mammals found in urban areas include scrub jay, northern mockingbird, house finch, raccoon, opossum, and striped skunk, and the introduced European starling and fox squirrel.

AQUATIC COMMUNITIES

Aquatic communities such as rivers and streams and ponds and lakes occur in every community described previously in Placer County. These aquatic communities provide important wildlife habitat and serve industrial, agricultural, domestic, and recreation users. Because of their widespread distribution and relatively small individual extent, smaller streams, ponds, and wetlands are not comprehensively mapped in Figure 9-5, and only those identified as special-status natural communities by the NDDB are shown in Figure 9-6.

Rivers and Streams

The habitat components of rivers and streams include open water, the bottom substrate, and riparian vegetation. Open water provides resting habitat for waterfowl and habitat for floating insects, which provide prey for amphibians, fish, and birds. In fast-moving riverine habitats, the bottom substrate is rocky and provides habitat for prey consumed by the American dipper. Slow-moving riverine habitats have sandy bottoms favored by freshwater clams that are prey to great blue herons and waterfowl.

Ponds and Lakes

Ponds and lakes are inland bodies of water, varying from small ponds to large lakes (Folsom Lake and Lake Tahoe). These habitats may contain algae and vegetation such as duckweed or pondweed. These habitats provide important habitat for fish-eating birds such as ospreys, western grebes, and belted kingfishers and resting and feeding habitat for waterfowl and shorebirds.

SPECIAL-STATUS SPECIES

Special-status species are plants and animals that are legally protected under state and federal Endangered Species Acts or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing.

Special-Status Plant Species

Special-status plants are species in the following categories:

- plants listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFG 17.12 [listed plants] and various notices in the Federal Register [proposed species]);
- plants that are Category 1 or 2 candidates for possible future listings as threatened or endangered under the federal Endangered Species Act (55 Federal Register [FR] 6184, February 21, 1990);
- plants listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5);
- plants listed under the California Native Plant Protection Act (Cal. Fish and Game Code, Section 1900 et seq.);

PLACER COUNTY GENERAL PLAN

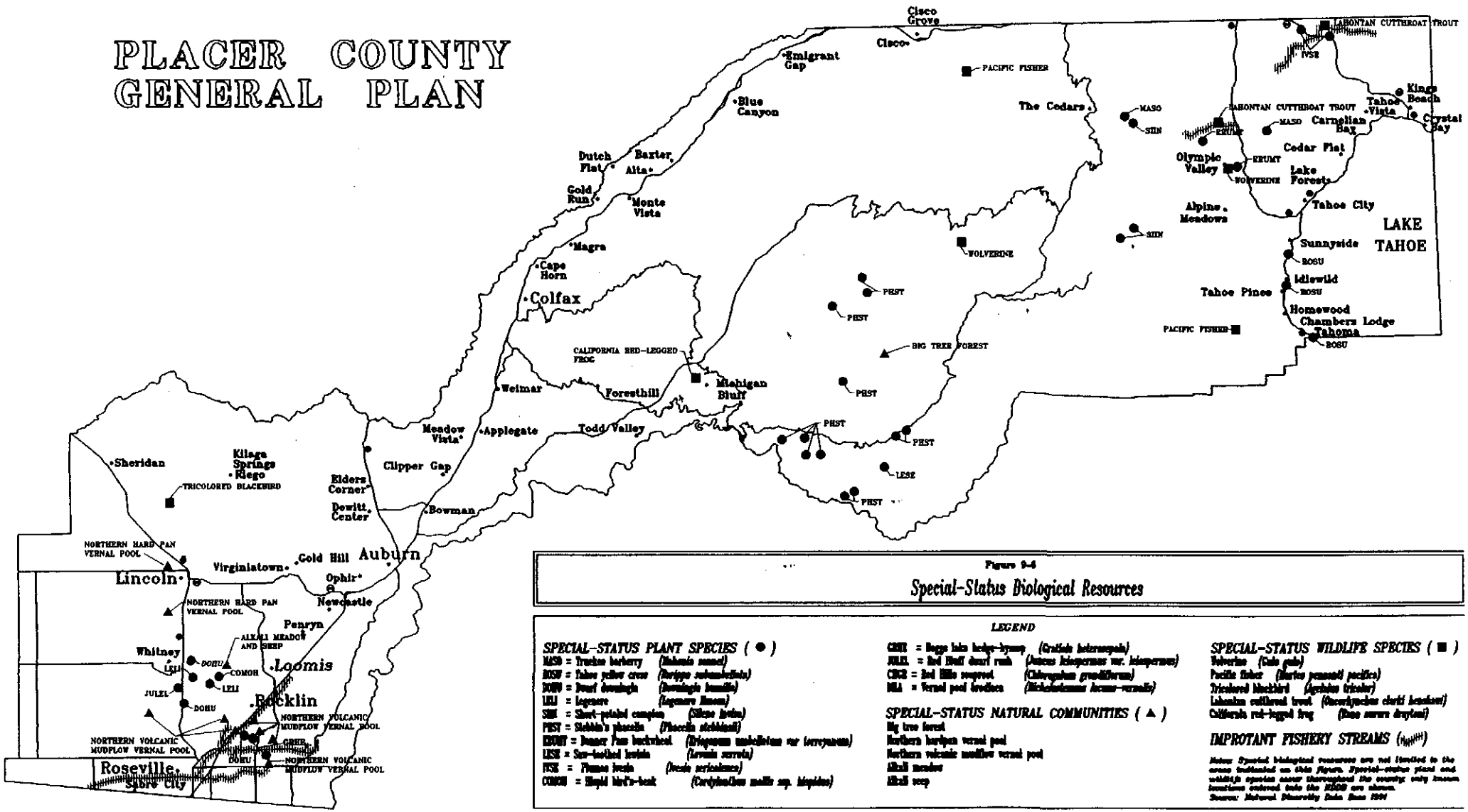


Figure 9-6

Special-Status Biological Resources

LEGEND

SPECIAL-STATUS PLANT SPECIES (●)

MASO = Truckee barberry (*Mahonia sonnei*)
ROSU = Tahoe yellow cress (*Rorippa subumbellata*)
DOHU = Dwarf downingia (*Downingia humilis*)
LELI = Legenere (*Legenere limosa*)
SIEN = Sheet-petaled cinquefoil (*Sibbaldia procumbens*)
PEST = Slebbin's phacelia (*Phacelia stebbinsii*)
ERUMT = Donner Pass buckwheat (*Eriogonum umbellatum var. torreyanum*)
LESE = San Joaquin lessingia (*Lessingia tenuis*)
PESE = Pleasant lessingia (*Lessingia micradenia*)
CORCH = Hispid bird's-beak (*Cordylanthus mollis ssp. hispidus*)
GREH = Boggs Lake hedge-hyssop (*Gratiola heterosepala*)
JULEL = Red Bluff dwarf rush (*Juncus leiospermus var. leiospermus*)
CRCE = Red Hills soaproot (*Chlorogalum grandiflorum*)
MIL = Vernal pool fairy shrimp (*Branchinecta lynchi-vernalis*)

SPECIAL-STATUS NATURAL COMMUNITIES (▲)

Big tree forest
Northern hardpan vernal pool
Northern volcanic mudflow vernal pool
Alkali meadow
Alkali seep

SPECIAL-STATUS WILDLIFE SPECIES (■)

Wolverine (*Gulo gulo*)
Pacific fisher (*Martes pennanti pacifica*)
Tricolored blackbird (*Agelaius tricolor*)
Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*)
California red-legged frog (*Rana aurora draytonii*)

IMPROTANT FISHERY STREAMS (~~~)

Note: Special biological resources are not limited to the areas indicated on this figure. Special-status plant and wildlife species occur throughout the county; only known locations entered into the NDDB are shown.
Source: Natural Diversity Data Base 1991

Scale 1" = 80,000'

Date: 8/14/92

Prepared by:
James & Stokes Assoc.

- plants that meet the definitions of rare or endangered under the California Environmental Quality Act (CEQA) (State CEQA Guidelines, Section 15380);

- plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1b and 2 in Smith and Berg 1988);

- plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in Smith and Berg 1988), which may be included as special-status species on the basis of local significance or recent biological information; and

- plants listed as sensitive by the local U.S. Forest Service (USFS) region (Forest Service Manual 2670).

The name, legal status, distribution, and habitat requirements of 32 special-status plant species that are known or have the potential to occur in Placer County are described in Table 9-8. This analysis was based on Smith and Berg (1988), NDDB (1991), USFS (1990), and discussions with local experts. Known locations for 14 of these special-status plant species (Natural Diversity Data Base 1991) are shown in Figure 9-6. Approximately 80 percent of the special-status plant species are associated with conifer forests or wetlands, vernal pools in grasslands, or wet mountain meadows (Figure 9-7). The name, status, habitat requirements, and distribution of 11 species of special concern are identified in Appendix 9-C. These species may not be considered rare under CEQA; however, because of their limited distribution, their status may change in the future.

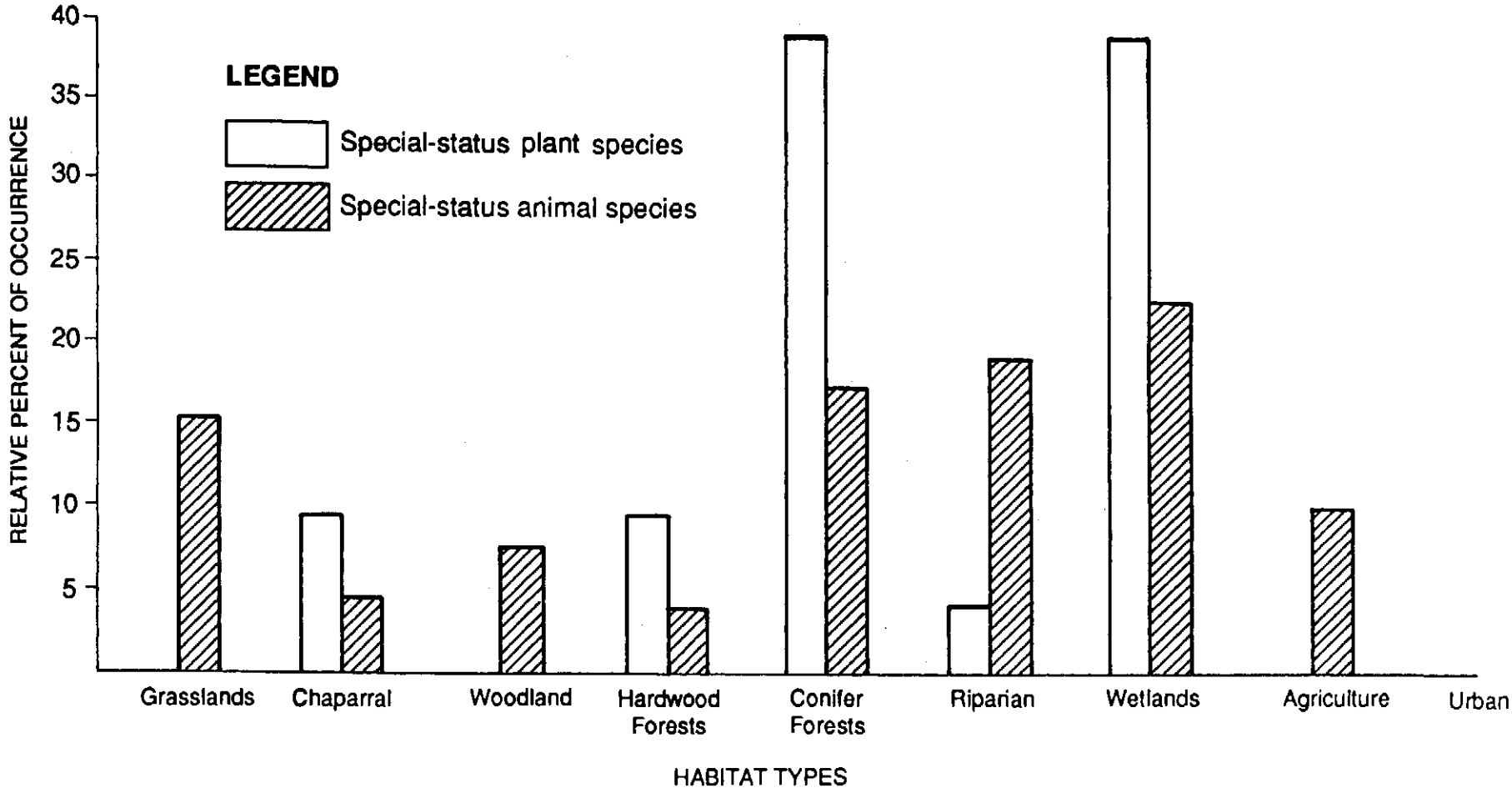


Figure 9-7. Distribution of Special-Status Species by Habitat Type in Placer County

TABLE 9-8

SPECIAL-STATUS PLANT SPECIES KNOWN OR WITH THE POTENTIAL TO OCCUR IN PLACER COUNTY

Plant Species	Listing Status* Federal/State/CNPS/USFS	Habitat Requirements	General Distribution
Wet cliff lewisia (*Lewisia cantelowii*)	--/--/1b/FS	Mesic rock outcrops in sierran-mixed conifer, ponderosa pine, and Jeffrey pine forests	Butte, Nevada, Plumas, Shasta, Sierra, and Placer Counties
Long-petaled lewisia (*Lewisia pygmaea* ssp. *longipetala*)	C3/--/1b/FS	Rocky slopes in coniferous forests	El Dorado, Sierra, and Nevada Counties, and possibly Placer County
Truckee barberry* (*Mahonia sonnei*)	E/E/1b/FS	Riparian woodland on rocky alluvium of floodplain	Sierra Nevada, primarily along the Truckee River
Tahoe yellow cress* (*Rorippa subumbellata*)	C1/E/1b/--	Moist places in coniferous forests; commonly along meadows, lake margins, and riparian areas; restricted to well-drained sites	El Dorado, Placer and Nevada Counties and the State of Nevada
Dwarf downingia* (*Downingia humilis*)	C3c/--/1b/--	Northern hardpan and claypan vernal pool in annual grasslands	Merced, Napa, Placer, Sacramento, Solano, Sonoma, and Stanislaus Counties; Sacramento and Sonoma Valleys
Legenere* (*Legenere limosa*)	C2/--/1b/--	Seasonally wet habitats such as vernal pools, ditches, marsh edges and riverbanks	Lower Sacramento Valley and upper San Joaquin Valley
Short-petaled campion* (*Silene invisa*)	C3c/--/1b/FS	Places near or under red fir forest, often along meadow margins; 6,000-8,000 foot elevation	Sierra Nevada from Alpine to Plumas Counties
Stebbins' phacelia* (*Phacelia stebbinsii*)	C2/--/1b/FS	Sierran-mixed conifer forest and moss- covered exposures on talus and scree and bedrock; 2,000-4,800 feet elevation	El Dorado and Placer Counties
Donner Pass buckwheat* (*Eriogonum umbellatum* var. *torreyanum*)	C3c/--/1b/FS	Rocky scree and talus on steep slopes and ridges in upper coniferous forests and montane chaparral; 7,000-7,800 feet elevation	Nevada, Placer and Sierra Counties
Saw-toothed lewisia* (*Lewisia serrata*)	C2/--/1b/FS	Hardwood and coniferous forests on shaded, north-facing rock cliffs	El Dorado and Placer Counties
Plumas ivesia* (*Ivesia sericoleuca*)	--/--/1b/FS	Seasonally wet sites, such as vernal pools in annual grasslands and meadows in coniferous forests	Nevada, Placer, Plumas and Sierra Counties
Hispid bird's-beak* (*Cordylanthus mollis* ssp. *hispidus*)	C2/--/1b/--	Alkaline or saline flats in alkali meadow, iodine bush scrub, and alkali grassland	Widespread but spotty in Sacramento and San Joaquin Valleys, and Coast Ranges
Bogg's Lake hedge-hyssop* (*Gratiola heterosepala*)	C2/E/1b/--	Vernal pools and margins of seasonally receding ponds and lakes	Widespread but infrequent, reported from Sacramento, Fresno, Madera, Lassen, Placer, Lake, and Shasta Counties and the State of Oregon
Red Bluff dwarf rush* (*Juncus leiospermus* var. *leiospermus*)	C3c/--/1b/--	Seasonally flooded sites such as vernal pools, ephemeral drainages and seeps in woodland and grassland communities	Central Valley from Red Bluff south to Merced County

Plant Species	Listing Status* Federal/State/CNPS/USFS	Habitat Requirements	General Distribution
Red hills soaproot* (*Chlorogalum grandiflorum*)	C2/--/1b/--	Open areas in chaparral where shrubs are low and scattered, primarily on gabbro and serpentine substrate	El Dorado, Placer and Tuolumne Counties
Balsamroot (*Balsamorhiza macrolepis* var. *macrolepis*)	--/--/3/--	Hardwood forest and annual grassland	Alameda, Butte, Mariposa, Placer, Santa Clara, and Tehema Counties
Sheldon's sedge (*Carex sheldonii*)	--/--/3/--	Lower coniferous forest on mesic sites (meadows)	Sierra Nevada and Cascade Ranges in Modoc, Placer, and Plumas Counties
California rayless daisy (*Erigeron inornatus* var. *reductus*)	--/--/3/--	Rock outcrops in ponderosa pine forest; 3,000 feet elevation	Nevada, Placer, Plumas and Sierra Counties
Branched draba (*Draba stenoloba* var. *ramosa*)	C3c/--/4/--	Dry meadows in subalpine coniferous forest	Alpine, El Dorado, Mono, Modoc Nevada and Placer Counties, and the State of Nevada
American mannagrass (*Glyceris grandis* var. *grandis*)	--/--/2/--	Flooded areas in wet meadows	Mono and Placer Counties; widespread outside California
Small bur-reed (*Sparganium minimum*)	--/--/3/--	Along lake margins in marshes and swamps	El Dorado, Placer, Plumas, Shasta, and Tuolomne Counties, and in Idaho, Oregon, and Washington

* Status explanation (see "Definitions of Special-Status Species" in text for references)

Federal: E = listed as endangered under the federal Endangered Species Act.
C1 = Category 1 candidate for federal listing. Category 1 includes species for which the USFWS currently has on file enough substantial information on biological vulnerability and threat(s) to support the proposals to list them.
C2 = Category 2 candidate for federal listing. Category 2 includes species for which the USFWS presently has some biological information indicating that listing may be appropriate, but for which further biological research and field study is usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, endangered, or threatened than Category 1 species or listed species. The distinction relates to the amount of data available and is therefore administrative and not biological.
C3 = Category 3 includes species that are no longer candidates for federal listing because they are (a) extinct, (b) taxonomically invalid or do not meet the USFWS definition of a "species", or (c) too widespread or not threatened at this time.

State (California Department of Fish and Game):
E = listed as endangered under the California Endangered Species Act.

California Native Plant Society (CNPS):
List 1b species: rare, threatened, or endangered in California and elsewhere.
List 2 species: rare, threatened, or endangered in California, but more common elsewhere.
List 3 species: plants about which we need more information--a review list.
List 4 species: plants of limited distribution--a watch list.

U.S. Forest Service (USFS):
FS = Forest Service

* Special-status plants with known occurrences in Placer County.

Special-Status Wildlife Species

Special-status animals are species in the following categories:

- animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.11 [listed animals] and various notices in the Federal Register [proposed species]);
- animals that are Category 1 or 2 candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (54 FR 554, January 6, 1989);
- animals that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- animals listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 CCR 670.5);
- animal species of special concern to the California Department of Fish and Game (Remsen 1978 [birds] and Williams 1986 [mammals]);
- animals fully protected in California (Cal. Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]); and
- animals listed as sensitive by the local USFS region (Forest Service Manual 2670).

The name, legal status, distribution, and habitat requirements of 41 special-status wildlife species that are known or have the potential to occur in Placer County are described in Table 9-9. These special-status species were identified through the NDDB (1991) and discussions with local experts. The Natural Diversity Data Base only depicts the known locations of species. It does not indicate the extent or range of a particular species or habitat nor does it indicat the presence or abscence of a special status species in any given area.

Known locations for five of these special-status wildlife species are shown in Figure 9-6. Approximately 74 percent of the special-status wildlife species were associated with grasslands, conifer forests, riparian habitat, and wetlands, primarily vernal pools (Figure 9-5). Because of different foraging and nesting habitat requirements and different seasonal habitat requirements, wildlife species may be associated with more than one habitat type.

TABLE 9-9

SPECIAL-STATUS WILDLIFE KNOWN TO OCCUR OR WITH THE POTENTIAL TO OCCUR IN PLACER COUNTY

Species	Legal Status Federal/State[a]	Habitat	Distribution
Invertebrates			
Valley elderberry longhorn beetle (*Desmocerus californicus dimorfus*)	FT/--	Riparian habitats with elderberry shrubs	Streamside habitats throughout the Central Valley
Conservancy fairy shrimp (*Branchinecta conservatio*)	PE/--	Vernal pools and seasonal wetlands	Vina Plains north of Chico, Tehama County; Jepson Prairie Preserve, Solano County; Haystack Mountain area, Merced County
Vernal pool fairy shrimp (*Branchinecta lynchi*)	PE/--	Vernal pools and seasonal wetlands	Vernal pools throughout the Central Valley, but uncommon
California linderiella fairy shrimp (*Linderiella occidentalis*)	PE/--	Vernal pools and seasonal wetlands	Vernal pools throughout the Central Valley, but uncommon
Packard's tadpole shrimp (*Lepidurus packardi*)	PE/--	Vernal pools, seasonal wetlands, and ponds	Vernal pools throughout the Central Valley, but uncommon
Amphibians			
California tiger salamander (*Ambystoma tigrinum californiense*)	C2/SSC	Grasslands and woodlands with vernal pools, small reservoirs, ponds, and slowly flowing streams	Central Valley and Central Coast Range from San Francisco Bay south to Santa Barbara County
California red-legged frog (*Rana aurora draytoni*)	C2/SSC	Slow-moving streams or ponds	Western portion of California, Sierra Nevada foothills south to Mariposa County; one location northeast of Foresthill
Foothill yellow-legged frog (*Rana boylei*)	--/SSC	Permanent fast-moving streams with cobbly bottoms	Northwestern portion of California, Coastal mountains, Sierra Nevada
Reptiles			
Western pond turtles (*Clemmys marmorata*)	C1/--	Ponds, marshes, and slowly flowing streams	Lowlands throughout California
Birds			
Bald eagle (*Haliaeetus leucocephalus*)	FE/SE	Trees along open water for nesting and roosting; forages near streams and lakes	Throughout northern California, usually near lakes and streams for breeding and wintering. Lake Tahoe is used regularly as a wintering area
Peregrine falcon (*Falco peregrinus*)	FE/SE	Protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large populations of birds for nesting and roosting	Very uncommon breeding resident and uncommon as a migrant; permanent resident on the North Coast Ranges; may summer on the Cascade and Klamath ranges south through the Sierra to Madera County; winters in the Central Valley

Species	Legal Status Federal/State*	Habitat	Distribution
Willow flycatcher (*Empidonax traillii*)	FSS/SE	Riparian areas with dense stands of willows for nesting; prefers large open river valleys or mountain meadows with lush vegetation	Uncommon summer resident in the Sierra Nevada and Cascade Range; common spring and fall migrant at lower elevations primarily in riparian habitats; a small population exists near Lake Van Norden, Placer County
Tricolored blackbird (*Agelaius tricolor*)	C2/SSC	Wetland habitats for nesting; forages in wetlands, agricultural fields, and pastures	Throughout lowlands of California and mountain valleys; one nesting colony observed in 1971 near Lincoln; the colony is presumed extirpated
Swainson's hawk (*Buteo swainsoni*)	C3/ST	Agricultural lands and grasslands with low vegetative cover for foraging; large mature trees for nesting (oak trees)	Central Valley and Klamath Basin; potential habitat in western Placer County, but no known nesting territories for this area
Long-billed curlew (*Numenius americanus*)	C2/--	Wetlands, moist grasslands; agricultural fields for foraging	Winters in the lowlands throughout California
California spotted owl (*Strix occidentalis*)	FS/SSC	Old growth forests dominated by conifers with a dense, multilayered canopy; nests in crevices of broken- topped trees or oaks	An uncommon permanent resident west of the Cascade Range through the North Coast Ranges, the Sierra Nevada and in more localized areas
Northern goshawk (*Accipiter gentilis*)	FS/SSC	Mid- to high-elevation mature dense conifer forests; nests in red fir, Jeffrey pine, and lodgepole pine forests	Permanent resident on the Klamath and Cascade Ranges, the North Coast Range from Del Norte to Mendocino Counties, and Sierra Nevada south to Kern County; winters in Modoc, Mono, and northern Inyo Counties
Black-shouldered kite (*Elanus caeruleus*)	--/FP	Riparian habitats and isolated trees for nesting; forages in grasslands	Lowlands throughout California
Osprey (*Pandion haliaetus*)	--/SSC	Trees near open water for nesting and roosting; forages in open water that contains fish	Throughout northern California, usually near large bodies of water; common nester along Lake Tahoe
Cooper's hawk (*Accipiter cooperii*)	--/SSC	Oak woodlands, riparian woodlands, and coniferous forests for nesting; forages in woodlands and edge habitats	Breeds throughout California
Sharp-shinned hawk (*Accipiter striatus*)	--/SSC	Riparian habitats in mid-elevation areas preferred, but can be found in a wide variety of habitats; north-facing slopes with plucking perches are critical requirements	Fairly common migrant and winter resident throughout California except very high elevations; uncommon permanent resident in the Sierra Nevada, Klamath, and North Coast Ranges; also found in scattered locations along the Transverse and Peninsular Ranges
American white pelican (*Plelecanus erythrorhynchos*)	--/SSC	Freshwater lakes with secluded islets and healthy fish populations for breeding; inhabits river sloughs and coastal bays the rest of the year	Fairly common summer resident at Lake Tahoe; winters along the California coast
Yellow warbler (*Dendroica petechia*)	--/SSC	Riparian forests and riparian scrub habitats preferred	Low- to mid-elevation mountains and northern Sacramento Valley
Yellow-breasted chat (*Icteria virens*)	--/SSC	Multilayered forests for nesting and foraging, usually near permanent water	Isolated populations throughout California

Species	Legal Status Federal/State[a]	Habitat	Distribution
Purple martin (*Progne subis*)	--/SSC	Abandoned woodpecker holes in large trees and snags for nesting; found primarily in conifer, valley oak, or cottonwood forests	Uncommon summer resident that nests throughout Sierra Nevada (except higher slopes), North Coast, South Coast, Klamath, and Cascade Ranges
Black swift (*Cypseloides niger*)	--/SSC	Ocean or inland cliffs near or behind waterfalls for nesting	Breeds locally along portions of the Sierra Nevada Range, including Placer and Nevada Counties; also found in the Cascade Range, San Gabriel, San Bernardino, and San Jacinto Mountains, and in coastal bluffs from San Mateo south to San Luis Obispo County
Great blue heron (*Ardea herodias*)	--/SSC	Shallow estuaries and fresh and saline emergent wetlands; less common along rocky marine shores, in croplands, pastures, and mountains above foothills	Permanent resident throughout most of California; rookeries are scattered throughout northern California and uncommon in southern California; one rookery known for Placer County northwest of Lincoln
Golden eagle (*Aquila chrysaetos*)	--/SSC	Oak woodlands and cliffs for nesting; oak savannas and grasslands for foraging	Foothills and mid-elevation mountains during the breeding season
Prairie falcon (*Falco mexicanus*)	--/SSC	Associated primarily with perennial grasslands, savannas, rangeland, some agricultural fields, and desert scrub areas; usually nests on sheltered ledges overlooking a large, open area	May summer on the Cascade and Klamath Ranges south through the Sierra Nevada to Madera County; uncommon resident on the North Coast and South Coast Ranges
Northern harrier (*Circus cyaneus*)	--/SSC	From annual grasslands to lodgepole pine and alpine meadows habitats; frequents meadows, grasslands, open rangelands, desert sinks, and freshwater and saltwater emergent wetlands	Widespread winter resident or permanent resident of the northeastern plateau and coastal areas; less common in the Central Valley
Burrowing owl (*Athene cunicularia*)	--/SSC	Ground burrows in sparse grassland, desert habitats, and agricultural fields for nesting	Lowlands throughout California
Short-eared owl (*Asio flammeus*)	--/SSC	Open areas with few trees such as annual and perennial grasslands, dunes, meadows, irrigated lands, and emergent wetlands usually preferred; nests in dry ground in a depression concealed in vegetation	A widespread winter migrant of the Central Valley, western Sierra Nevada foothills, and the southern desert region; formally a resident throughout the state, excluding higher mountains
Long-eared owl (*Asio otus*)	--/SSC	Dense riparian stands of willows, cottonwoods, or live oaks; uses adjacent open lands for foraging; nests in abandoned crow, hawk, or magpie nests	Permanent resident east of the Cascades from Placer County north to the Oregon border; uncommon local resident of Owens Valley, Fish Lake Valley, and numerous wooded washes and oases throughout southeastern California
Mammals			
Sierra Nevada red fox (*Vulpes vulpes nector*)	C2/FS/ST	A variety of habitats in montane and sub-alpine, including conifer forests, wet meadow, riparian, and aspen habitats	Rare resident of the Sierra Nevada from the Cascades in Siskiyou County and from Lassen County south to Tulare County
Wolverine (*Gulo gulo*)	C2/ST	A variety of habitats, including mixed conifer, wet meadow, and montane riparian habitats	Rare resident of Sierra Nevada range from Siskiyou and Shasta Counties south to Tulare County; also sightings from North Coast mountains; three sitings in Natural Diversity Data Base, two from Kingvale area and one from Squaw Valley

Species	Legal Status Federal/State[a]	Habitat	Distribution
Sierra Nevada snowshoe hare (*Lepus americanus tahoensis*)	C2/SSC	Open meadow and flat-topped hills with scattered brush or open stands of trees for cover preferred	Uncommon resident of Sierra Nevada Range crest and eastern slope from Oregon border south to Tulare and Inyo Counties
Ringtail (*Bassariscus astutus*)	--/CP	Rocky crevices, snags, or hollow trees in a variety of habitats, including riparian and chaparral	Throughout California except the Central Valley
Pacific fisher (*Martis pennanti*)	FS/SSC	Intermediate to old growth tree stages of conifer forests and deciduous-riparian habitats with high percent canopy closure; prefers areas with hollow logs and snags for breeding and foraging	Uncommon resident of the Sierra Nevada, Cascades, Klamath Mountains, and isolated areas of the North Coast Ranges
American badger (*Taxidae taxus*)	--/SSC	Open, uncultivated ground for breeding, including grasslands and oak savannas	Breeds throughout mountainous areas and uncultivated valleys throughout California
Pine martin (*Martis americana*)	FS/--	Mixed evergreen forests with more than 40% crown closure and large trees and snags preferred	Uncommon to common resident of the Sierra Nevada, Klamath, and Cascade mountains, and the North Coast regions
Townsend's western big-eared bat (*Plecotus townsendii pallescens*)	--/SSC	Mesic habitats preferred; occupies a variety of habitats except subalpine and alpine habitats	Once a common resident throughout most of California; now considered uncommon throughout the state

[a] Status explanations:

Federal

FE = listed as endangered under the federal Endangered Species Act.
FT = listed as threatened under the federal Endangered Species Act.
C1 = Category 1 candidate for federal listing. Category 1 includes species for which U.S. Fish and Wildlife Service (USFWS) has on file enough substantial information on biological vulnerability and threat to support proposals to list them.
C2 = Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.
C3 = no longer a candidate for federal listing. Catergory 3 species have been dropped from the candidate list because they are extinct (c3a), taxonomically invalid or do not meet the USFWS definition of a "species" (C3h), or too widespread or not threatened at this time (C3c).
FS = U.S. Forest Service sensitive species.
PE = proposed for listing as endangered under the federal Endangered Species Act.

State

SE = listed as endangered under the California Endangered Species Act.
ST = listed as threatened under the California Endangered Species Act.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern.

WETLANDS

Wetland communities play a vital role in groundwater recharge, water quality protection, and provide habitat for dependent plant and wildlife species. A variety of wetlands occur in Placer County and activities that affect these wetlands may require special permitting.

Under Section 404 of the federal Clean Water Act, the U.S. Army Corps of Engineers regulates the placement of dredge or fill materials into "waters of the United States" which can be divided into "wetlands" and "other waters of the United States". Any proposed development or activity that would result in placement of dredge or fill material into jurisdictional wetlands or other waters of the United States would require a permit from the Corps, under Section 404 of the Clean Water Act. State water quality certification is required for both nationwide and individual Section 404 permits. The State Department of Fish and Game (DFG) and the U.S. Fish and Wildlife Service (FWS) also have responsibilities for ensuring that a broad range of wetland related ecological impacts are adddressed.

Wetlands

In Placer County, areas that have a high potential to meet the regulatory definition of wetlands are vernal pools, alkali meadows and seeps, wet meadows, fresh emergent wetlands, and portions of montane riparian and mixed riparian forests. In addition to wetlands defined by the Clean Water Act, substantial wetland habitat values or other ecological benfits may be associated with functional wetlands which are not specifically delineated pursuant to the procedures used for Section 404 permits.

Throughout California, wetlands have been reduced significantly because of agriculture and development. In response to these impacts, Placer County is evaluating the use of a wetland mitigation banking plan as one mechanism to ensure no net loss of wetlands in the county. Similar programs and policy formulation were recommended by an open space task force that was be formed in late 1992. The task force was composed of private citizens, public agency representatives, and private interest group representatives.

Vernal Pools: Vernal pools are seasonal wetlands unique to California's grasslands and oak savannas. These small basins have an impervious rock or clay layer that collects water from storms; they gradually dry out by evaporation as the weather becomes warmer in the spring. Throughout California, vernal pools have been degraded or lost through a combination of agriculture, urban development, water projects, and grazing.

Several types of vernal pools have been identified in California, reflecting the state's diverse climate, topography, soil, and vegetation characteristics (Jokerst 1990). Northern volcanic mudflow vernal pool and northern hardpan vernal pool are the two types of vernal pools in Placer County. These wetlands occur in annual grasslands around the vicinity of Rocklin, Roseville, Loomis, and Lincoln. These urban areas have experienced significant growth recently, which has eliminated critical vernal pool habitat over a large area.

Northern hardpan vernal pools develop on old, hardpan soils, and northern volcanic mudflow vernal pools develop over bedrock of volcanic origin. These pools contain diverse annual wildflowers and grasses. Several species have evolved life cycles dependent on vernal pools, including several species of popcorn flowers, annual hairgrass, purple-horned downingia, rayless goldfields, and marigold navarettia. (Holland 1986.)

Vernal pools provide habitat for water beetles and other insects that serve as food for amphibians and waterfowl. They also provide important breeding habitat for western toads, western spadefoot toads, and tiger salamanders and resting habitat for mallards, cinnamon teal, and shorebirds.

Alkali Meadow and Seep: Alkali meadows and seeps develop on sites with somewhat permanently moist, alkaline soils. These wetland communities form a mosaic in an annual grassland community north of Roseville and are threatened by development in the area. The alkali seep is dominated by rush species, and saltgrass dominates the meadow community. The hispid bird's beak, a candidate species, is unique to this habitat.

Wet Meadow: Wet meadows are present in areas of poorly drained soils where water is at or near the surface most of the growing season. These wetlands are present in grasslands, foothills, and every forest community in the Sierra Nevada. Common plants include sedges, rushes, willows, spikerush, and redtop. Common species of wildlife include red-winged and yellow-headed blackbirds, Pacific tree frog, long-toed salamanders, racers, and western aquatic garter snakes.

Fresh Emergent Wetland: Fresh emergent wetlands are present in low-lying areas of level terrain and along rivers, drainages, ponds and lakes where the soil is perennially saturated. These wetlands are found throughout Placer County and are characterized by a different association of species at varying elevations. Common vegetation includes cattails and tules interspersed with rushes and sedges. These wetlands provide important wildlife habitat, particularly for waterfowl and shorebirds.

Other Waters of the United States and Functionally Related Habitats

Most of the rivers and streams and lakes and ponds in Placer County qualify as other waters of the United States and are regulated under Section 404 of the Clean Water Act. In addition, some wetland habitats are functionally related to those habitats delineated by the U.S. Army Corps' procedures, (i.e., they contain some but not all of the characteristics of a jurisidictional wetland), even though they do not meet the criteria of a jurisdictional wetland. It should be acknowledged that the ecological benefits of these "non-jurisdictional" wetlands are important to fish and wildlife resources in Placer County and throughout the state.

RARE NATURAL PLANT COMMUNITIES

DFG maintains a list of California plant communities of special concern. The list includes communities that have always had a limited distribution and communities that have become limited because of human activities.

Five rare natural plant communities are present in Placer County, and known locations of these communities are identified in Figure 9-6. Four of these communities were previously described: the northern hardpan vernal pool, northern volcanic mud flow vernal pool, alkali meadow, and alkali seep. The fifth community, big tree forest, is described below.

Big Tree Forest

The big tree forest consists of large stands of giant sequoias that are present in isolated groves along the west slope of the Sierra Nevada. These groves are the remnants of forests that once were present in the western United States. The northernmost grove of these trees is in Placer County, approximately 25 miles west of Lake Tahoe.

SIGNIFICANT NATURAL AREAS

The Significant Natural Areas Program is administered by DFG and designed to encourage recognition of the state's most significant natural areas and to seek perpetuation of these areas (California Fish and Game Code 1930-1932). Significant Natural Areas (SNAs) have no legal status, but they have been identified in response to a legislative mandate (Assembly Bill 1039) to raise the level of awareness about California's natural diversity and to identify opportunities for which cooperative efforts can conserve important biological resources.

DFG has only used the NDDB to identify SNAs in each county. The exact boundaries of SNAs have not been established because thorough field surveys have not been completed. SNAs have been identified on the basis of biological value alone; geological or cultural resource values have not been included in the inventory. To qualify as an SNA a site must meet one of the following four criteria:

- the species or community (element) is extremely rare,
- the site has a collection of three or more rare elements,
- the element is the best example (relatively undisturbed condition), or
- the element is a center of high diversity.

Ten SNAs have been identified in Placer County. Their general location, the number of elements, and the criteria used to identify the SNA are described in Table 9-10.

TABLE 9-10

DESCRIPTION OF SIGNIFICANT NATURAL AREAS IN PLACER COUNTY

Location	Elements	Rationale
Lower Miner's Ravine	Fall-run chinook salmon stream	Best example
Roseville eastern vernal pools	Northern volcanic mudflow vernal pools.	
Roseville northern vernal pools	Northern hardpan vernal pool, northern	Extremely rare
Pole Creek	Lahontan cutthroat trout stream	Extremely rare and
Upper Secret Ravine	Fall-run chinook salmon stream	Best example
Long Canyon	Saw-toothed lewisia, Stebbins' phacelia	
Upper Pleasant Grove Creek	Alkali meadow, alkali seep, hispid bird's-	
Martis Creek	Lahontan cutthroat trout stream	Best example
Blackwood Creek	Tahoe yellow cress	Extremely rare
Ward Creek	Tahoe yellow cress	Extremely rare

Source: Meyer, pers comm.

MIGRATORY AND RESIDENT DEER HERDS

Two migratory deer herds are present in Placer County. The Blue Canyon deer herd is west of the Sierran crest in the southern portion of the county, and the Loyalton-Truckee deer herd is in the northeastern corner of the county (Figure 9-8). The Blue Canyon Deer Herd will winter below the critical wintering areas depicted on Figure 9-8. This figure is based on maps provided by the Placer County Fish and Game Commission and identifies the location of critical winter range, noncritical winter range, migration routes, holding areas, critical summer range, and critical fawning areas. Critical

seasonal ranges are important because of State policy to restore and maintain critical deer habitats. Much of Placer County also functions as habitat for resident deer populations. The extent and reltative condition of these heris not well known.

Deer have a significant economic value as a natural resource. In Placer County in 1987, the average hunter spent $146.20 for a hunting trip and would participate in an average of 4 trips per year. The estimated 3,370 hunters who visited the area in 1987 spent approximately $1,900,000 within the local economy. Deer have economic benefits for non-hunters as well. Many individuals travel to rural or scenic areas specifically for the opportunity to viewing wildlfie. Without the diversity of wildlife and/or the opportunity to see wildlife, the attractiveness to tourists would decline.

Deer are also an important indicator species on the quantity and quality of early and mid-successional habitat. As deer populations fluctuate up and down and/or the quality or health of the herd is monitored for improvement or deterioration, they will indicate the quality and quantity of critical habitat areas.

FISHERIES

Water bodies within and bordering Placer County support numerous species of native and introduced game and nongame fish. The wide variety of warmwater and coldwater lakes, streams, rivers, and ponds in the county support fish species adapted to a range of aquatic conditions. Placer County's fisheries are a valuable natural and recreational resource.

Lahontan cutthroat trout is listed as federally threatened and is the only special-status fish found in Placer County. This species is known to occur in two drainages in the northeastern portion of the county, including Martis Creek and Pole Creek (Figure 9-6). Native fish occur in all watersheds in Placer County. Table 9-11 lists the native and introduced fish species that occur in the watersheds of Placer County.

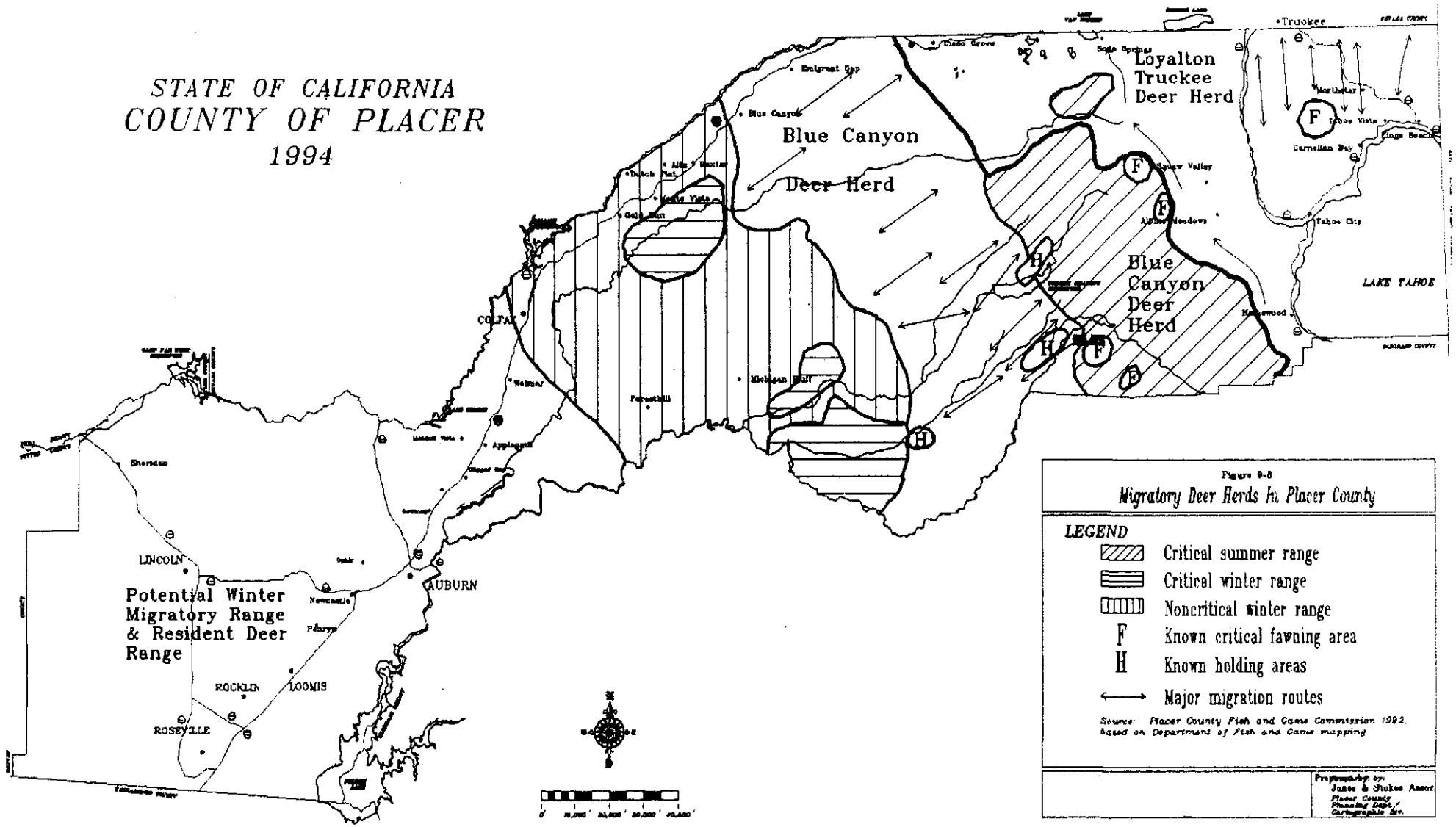

STATE OF CALIFORNIA
COUNTY OF PLACER
1994
Loyalton
Truckee
Deer Herd
Blue Canyon
Deer Herd
Blue
Canyon
Deer
Herd
Potential Winter
Migratory Range
& Resident Deer
Range
Truckee
Tahoe City
LAKE TAHOE
COLFAX
AUBURN
LINCOLN
ROCKLIN
LOOMIS
ROSEVILLE
Sheridan
Applegate
Newcastle
Penryn
Figure 9-8
Migratory Deer Herds in Placer County
LEGEND
Critical summer range
Critical winter range
Noncritical winter range
F Known critical fawning area
H Known holding areas
Major migration routes
Source: Placer County Fish and Game Commission 1992,
based on Department of Fish and Game mapping.

TABLE 9-11

NATIVE AND INTRODUCED FISH FOUND IN PLACER COUNTY

Common Name	South Yuba River	Bear River	Truckee River	Lake Tahoe	North Fork American River	Middle Fork American River	Rubicon River	American River
Mountain Whitefish			N	N				
Brown trout	I	I	I		I	I	I	
Kokanee				I				
Brook trout	I	I	I		I	I	I	
Lake trout				I				
Cutthrout trout			N	N				
Rainbow trout	N	N	I	I	N	N	N	N
Carp	I						I	I
Goldfish		I						I
Golden shiner	I	I	I	I	I	I	I	I
Tui chub			N	N				
Speckled dace	N	N	N	N	N	N	N	N
Lahontan redside			N	N			N	
Red shiner	I	I	I	I	I	I	I	I
Fathead minnow	I	I	I	I	I	I	I	I
California roach								N
Mountain sucker			N					
Tahoe sucker			N	N			I	
Sacramento sucker		N			N	N	N	N
Channel catfish					I			I
White catfish					I			
Brown bullhead					I			I
Black bullhead					I			I
Rainwater killifish								I
Mosquito fish	I	I	I	I	I	I	I	I
Black crappie		I				I		I
White crappie		I						I
Warmouth		I						I
Green sunfish		I			I			I
Bluegill		I			I			I
Pumpkinseed			I					
Redear sunfish		I			I			I

Largemouth bass		I			I			I
Smallmouth bass		I			I			I
Prickly sculpin								N
Piute sculpin			N	N				
Riffle sculpin	N	N			N	N	N	
Hitch			N					N

Notes: N = Native; I = Introduced

Source: Moyle 1976.

The western slopes of the Sierra Nevada down to the Central Valley can be classified according to three fish zones, although considerable overlap exists in species occurrence: rainbow trout zone, California roach zone, and squawfish-sucker-hardhead zone (Moyle 1976). The rainbow trout zone is located in the mountains where clear, cold waters form high-gradient headwater streams. Water is swift, permanent, and cold (rarely exceeding 21°C), and saturated with oxygen. Streams usually have more riffles than pools. Trout, speckled dace, and riffle sculpin naturally occur in this zone. The occurrence of trout has been greatly extended by human actions in formerly barren streams and lakes through extensive planting programs at the turn of the century.

The California roach zone is located in the oak and digger pine woodlands of the foothills. The streams are typically small, warm tributaries to larger streams and are frequently intermittent. Green sunfish, an introduced species, now dominate most of this zone, but Sacramento suckers, squawfish, and other minnows also may be found.

The squawfish-sucker-hardhead zone is located in the lower foothills of the Sierra Nevada. The streams typically have minimal summer flows; deep, rocky pools; and wide, shallow riffles. Sacramento squawfish and Sacramento suckers are the most abundant fish in the zone. Speckled dace, hardhead, California roach, and prickly sculpin are other native fishes found in this zone. Introduced species, such as small and largemouth bass, green sunfish, mosquito fish, and carp, also are common.

Reservoirs within the county generally support native fish species that existed before dam construction and introduced species. Low elevation reservoirs support bluegill, largemouth bass, carp, golden shiner, black crappie, brown bullhead, and mosquito fish. Brown and Rainbow trout are found in high-elevation reservoirs and large low-elevation reservoirs.

Streams of the Truckee River basin flow east down the steep slopes of the Sierra Nevada and eventually into Nevada. Headwaters usually contain only trout. The endangered native Lahontan cutthroat trout have been largely replaced by introduced rainbow, brook, and brown trout; however, Lahontan cutthrout are still found in Pole and Martis Creeks. At lower elevations, to the east, mountain suckers, mountain whitefish, and speckled dace are present and Lahontan redsides are found in low-gradient areas.

The Lake Tahoe Basin supports fish species similar to those in the Truckee River basin, except that the Tahoe sucker replaces the mountain sucker. Introduced lake trout and kokanee salmon also inhabit the lake.

9.5 MINERAL RESOURCES

An extensive range of extractive mineral resources are found throughout Placer County, many of which have been mined since the Gold Rush era. Placer County formally recognized the need to protect these resources and to reclaim mined sites for future alternative uses in the 1967 Placer County general plan. In 1973, the County established policies in the Placer County Open Space and Conservation Plan regarding the protection and future reclamation and reuse of these sites. After the passage of the California Surface Mining and Reclamation Act (SMARA) in 1975, the County initiated more specific goals, policies, and implementation measures to assure the compatibility of mining activities and reclamation proposals with surrounding land uses (Placer County Planning Department 1984).

EXISTING EXTRACTIVE OPERATIONS

Current mineral extractive operations in Placer County are shown in Figure 9-9 and include sand and gravel, clay, stone, and gold. Sand and gravel extraction is the most common current mining activity in Placer County.

Aggregate (Sand, Gravel, and Decomposed Granite)

Five major and several smaller producers of sand and gravel are located throughout non-federal lands in Placer County (Figure 9-9). In addition to extraction processes, these operators also produce asphalt, portland cement, and crushed quarry rock. The large producers are concentrated on the Bear River, near Truckee, and near the Sunset Industrial area.

Clay

Five clay extraction sites are located near Lincoln and one site is located in the Colfax-Weimar area (Figure 9-9).

Stone

Current stone quarries are concentrated in the southwest portion of Placer County, south of Bowman, Newcastle, and Loomis (Figure 9-9).

Gold and Other Heavy Minerals

Although current gold mining in Placer County is minimal compared to past mining activity, some operations continue to produce (Figure 9-9). In some cases, gold is extracted as part of sand and gravel operations. Several gold mines and claims are located on federal lands in Placer County, but the County has little information about these operations.

KNOWN EXTRACTIVE RESOURCES IN PLACER COUNTY

Figure 9-10 shows the known mineral resources and the existing extractive sites in Placer County. These mineral resources are aggregate (sand, gravel, and decomposed granite), clay, gold, quartz, stone (granite, limestone, and crushed quarry rock), and other minerals and ores; they are described in more detail below.

Aggregate (Sand, Gravel, and Decomposed Granite)

Revenue generated by sand and gravel production in Placer County is estimated to be several times the value of all other minerals combined (Placer County Planning Department 1984). The high demand for aggregate is linked to construction activity. Over 90 percent of the state's production of sand is gravel used for construction and road building.

Sand and gravel resources in the county are located along several streambed and adjacent floodplain deposits and are shown in Figure 9-10. The largest streambed deposit is located on a 20-mile stretch of Bear River between Dutch Flat and Lake Combie in northern Placer County. Blackwood Creek, which is in eastern Placer County and flows into Lake Tahoe near Tahoe Pines, is the other major sand and gravel resource in Placer County. It is however, highly unlikely that further sand/gravel mining could be permitted because of Stream Environment Zone protection regulations in effect in the Tahoe Basin. Because aggregate is a low-value, high bulk weight commodity, transporting the material from the extraction site to the market area is the major production cost. As a result, several identified streambed and floodplain deposits in Placer County could be infeasible areas for actual aggregate production because of high transportation costs (California Division of Mines and Geology 1964).

In addition to large, regional sand and gravel deposits, several small decomposed granite operations are located on nonfederal lands in various locations shown in Figure 9-10.

Clay

Clay deposits are mostly located in western Placer County, near Colfax-Weimar and Lincoln. The clay mined in Placer County is considered high quality because it is suitable for construction brick, which requires a high-temperature firing process. The demand for clay also is linked to construction products, which include roofing tile, interlocking tiles, construction brick, fire brick, and sewer pipe (Placer County Planning Department 1984). Although aggregate production is strongly dependent on the local and regional market demand, clay mined in Placer County is shipped to areas throughout North America and Hawaii (Placer County Planning Department 1984).

Stone

Granite and, to a lesser extent, limestone are available mineral resources in Placer County. Granite quarrying has occurred since the 19th century and high-quality granite is extracted for producing building stone and tombstones. Limestone is mined in limited quantities for similar products. Figure 9-10 shows the locations of the existing granite and limestone resources. Potential sites are scattered throughout the county, but existing sites are located mostly in the southwest portion of the county (Figure 9-10).

Gold and Other Heavy Minerals

Figure 9-9 shows that several potential resource sites for extracting gold, platinum, and silver are located in the county. Several of these sites are located on Tertiary-aged stream gravel, river channel, and intervolcanic river channel deposits, which were mined extensively during the 19th and early 20th centuries when market demand made gold extraction feasible (California Division of Mines and Geology 1932). The principal gold districts in Placer County are placer deposits, and some sand and gravel operations on the American and Bear Rivers have yielded gold. Some minor lode deposits of gold also are present in the county (California Division of Mines and Geology 1970).

Mineral Resources on Federal Lands

Mineral resources and mining operations that occur on federally managed lands are not under the jurisdiction of Placer County and are not subject to County review and approval. Information provided by the Tahoe National Forest indicates that 14 mining sites are operating with plans of operation approved

by the USFS and 13 sites with approved notices of intent. These mining areas are shown in Figure 9-9. Several hundred small mining claims are on federal lands in Placer County; however, actual mining probably will not occur on most of them.

EXISTING MINERAL RESOURCE MANAGEMENT PLANS

SMARA requires cities and counties to adopt ordinances in accordance with state policy for the review and approval of reclamation plans and for the issuance of special conditional use permits to conduct surface mining operations.

On August 31, 1976, Placer County adopted Section 2600 of the zoning ordinance, which implemented the state's surface mining and reclamation regulations in Placer County. Since then, all new mining activities are required to obtain approval of a reclamation plan before a conditional use permit to proceed with operations will be issued.

The County currently has approved reclamation plans for several mining operations, listed in Table 9-12. The table is based on available mining operations inventory sheets from the 1984 Mineral Resource Conservation Plan (Placer County Planning Department 1984) and updated mining operations information from the Placer County Planning Department (Yeager pers. comm.). Additional mining sites in the county that were in operation before the passage of SMARA probably exist, but have not yet been identified.

PLACER COUNTY GENERAL PLAN

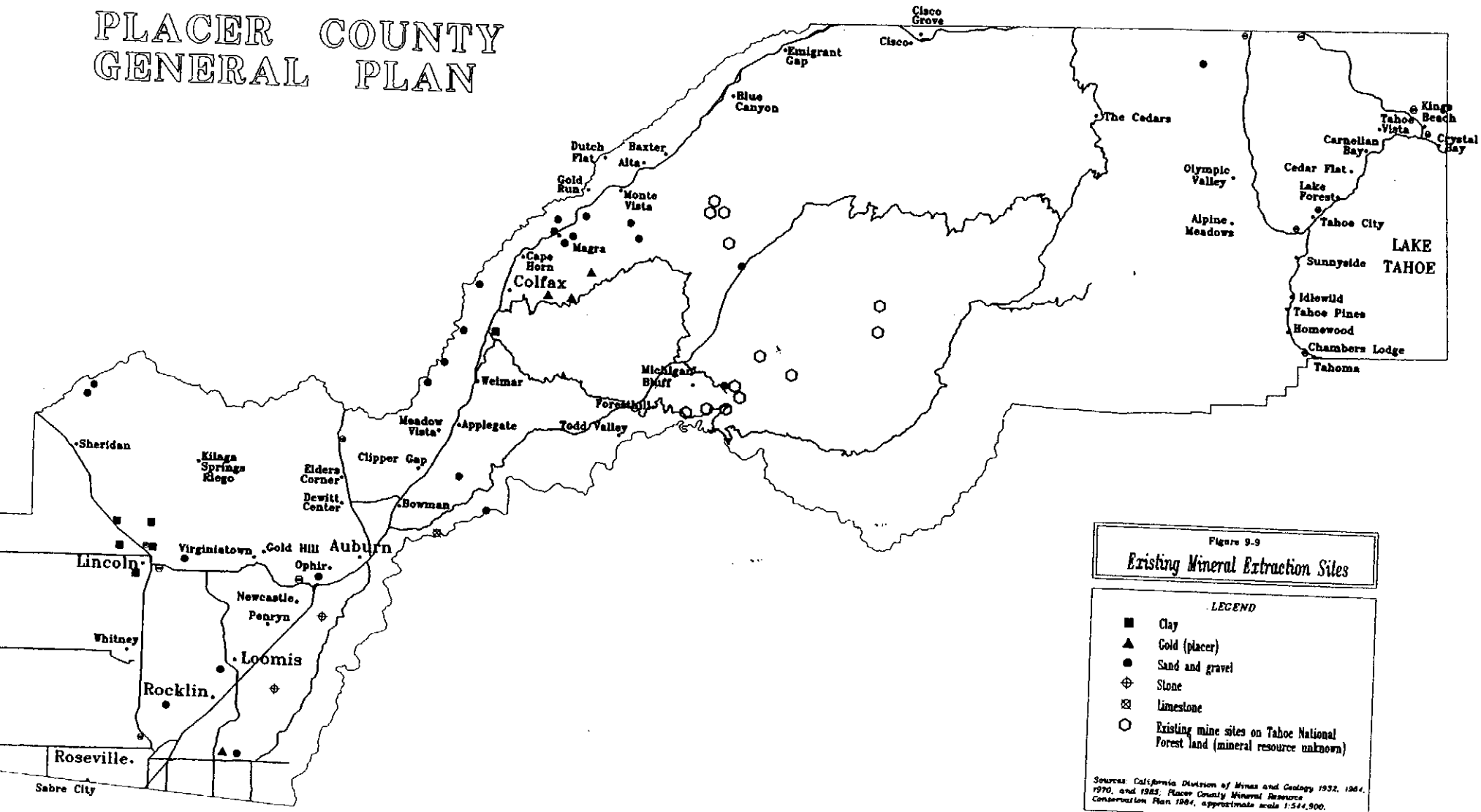


Figure 9-9

Existing Mineral Extraction Sites

LEGEND

- Clay
- Gold (placer)
- Sand and gravel
- Stone
- Limestone
- Existing mine sites on Tahoe National Forest land (mineral resource unknown)

Sources: California Division of Mines and Geology 1932, 1964, 1970, and 1985. Placer County Mineral Resource Conservation Plan 1984, approximate scale 1:544,900.

Scale 1" = 30,000'

Date: 8/14/92

Prepared by: Jones & Stokes Assoc.

TABLE 9-12

MINING OPERATIONS IN PLACER COUNTY

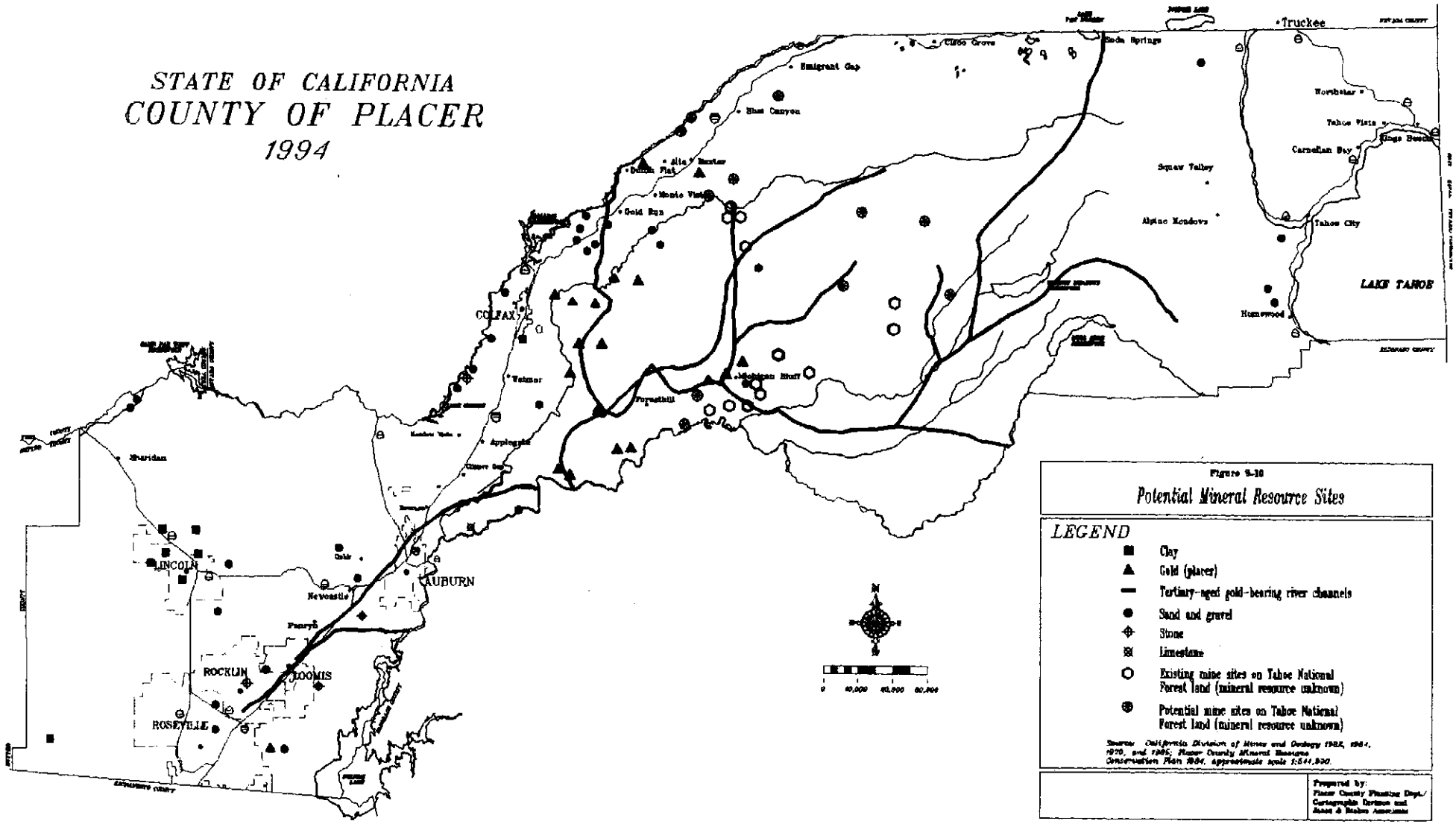
Type	Operator	Reclamation Plan Status
Aggregate	Alpine Forestry	Submitted-Approved
	A.J. Cheff	Submitted-Not Approved
	Big Gun Mining	Submitted-Not Approved
	Joe Chevreaux	Submitted-Approved
	R.C. Collet	Submitted-Approved
	Livingston's	Submitted-Approved
	Patterson	Submitted-Approved
	Placer Silica	Submitted-Approved
	Robinson	Submitted-Approved
	Sutherland	Submitted-Approved
	Richie	Submitted-Approved
	Bear River	Submitted-Approved
Clay	American Olean Tile	Submitted-Approved
	Gladding McBean	Submitted-Approved
	Lincoln Clay	Submitted-Approved
Stone	Lincoln Rock	Submitted-Approved
Gold and Other Ores	Placer Silica	Submitted-Approved
	Seeker	Submitted-Approved

Source: Placer County Planning Department 1984; Kubik pers. comm. 1992.

9.6 OPEN SPACE RESOURCES

The State of California general plan guidelines list open space elements as one of the required general plan elements. Government code section 65560(b) defines open space land as "any parcel or area of land or water which is essentially unimproved and devoted to an open space use". Types of open space that should be discussed in a general plan include open space for preservation of natural resources, such as preserve lands, wilderness areas, or refuges; open space used for the managed production of resources, such as agriculture and timber production; open space for outdoor recreation, such as regional recreation areas or major recreation destination areas; and open space for public health and safety, such as earthquake fault zones, unstable soil areas, and floodplains.

EXISTING PROTECTED OPEN SPACE LANDS


STATE OF CALIFORNIA
COUNTY OF PLACER
1994
Truckee
Soda Springs
Cisco Grove
Emigrant Gap
Blue Canyon
Dutch Flat
Alta
Baxter
Monte Vista
Gold Run
Squaw Valley
Alpine Meadows
Tahoe City
Homewood
LAKE TAHOE
COLFAX
Weimar
Applegate
Meadow Vista
Grove Hill
Sheridan
LINCOLN
Sutter Hill
Newcastle
Penryn
AUBURN
ROCKLIN
LOOMIS
ROSEVILLE
Figure 9-10
Potential Mineral Resource Sites
LEGEND
Clay
Gold (placer)
Tertiary-aged gold-bearing river channels
Sand and gravel
Stone
Limestone
Existing mine sites on Tahoe National Forest land (mineral resource unknown)
Potential mine sites on Tahoe National Forest land (mineral resource unknown)
Source: California Division of Mines and Geology 1982, 1964, 1970, and 1985; Placer County Mineral Resource Conservation Plan 1984, approximate scale 1:544,000.
Prepared by:
Placer County Planning Dept./ Cartographic Services and Assoc & Native Americans

Placer County contains a significant open space resource that is currently used for a variety of purposes, including agriculture and timber production, recreation, mineral resource extraction, and natural and biological resource preservation. Much of the county open space resource is managed for multiple use, such as national forest lands, which are used for timber production, recreation, and resource preservation.

Open space can be analyzed by dividing the county into broad open space classifications based on existing predominant land uses, based on the analytical framework provided in the General Plan Guideline (Governor's Office of Planning and Research 1990). These categories include Open Space for the Managed Production of Resources, Open Space Used for Preservation of Natural Resources, Open Space Used for Outdoor Recreation. A fourth classification would be Unprotected "de facto" Open Space. Many open space areas may be managed for primary land uses that make them suitable for one or more of these classifications.

Another open space category identified in the General Plan Guidelines is Open Space for Public Health and Safety, which identifies land designated for geological or flood hazard zones. Because these types of hazard zones are generally found in combination with other open space land classifications and are not designated as primary land uses in Placer County, this category is not used in this open space analysis.

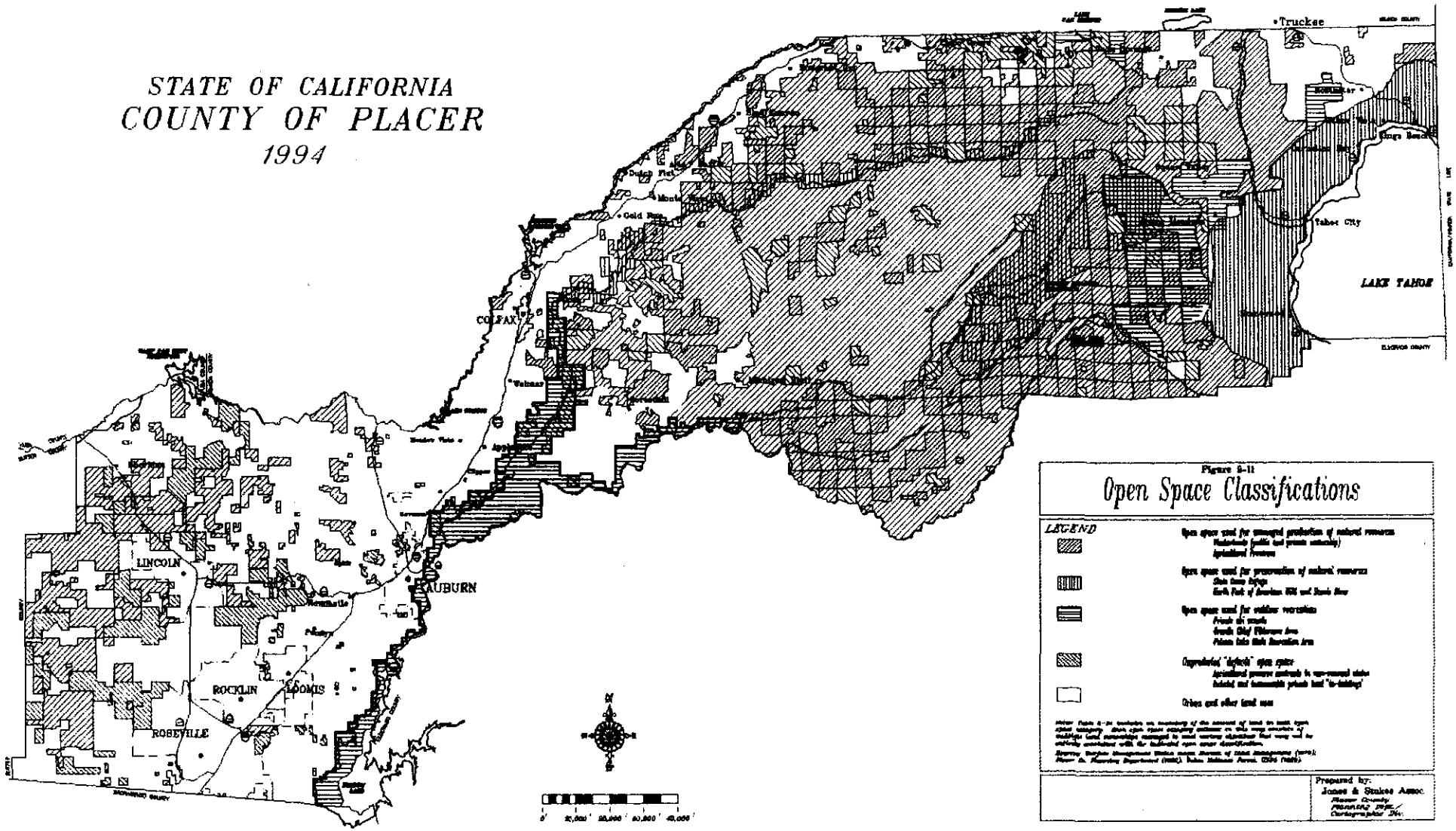
Land that is primarily urban, suburban, and rural residential in character or that may be developed for such uses would not be considered open space, although much of this land may be presently undeveloped or underdeveloped. Some land within these areas that are not open space may contain isolated urban parks or greenbelts that are an important component of the overall county inventory of open space.

Open Space for the Managed Production of Resources

This open space classification includes land that is used primarily for natural resource production. The predominant resource production land uses in Placer County are related to timber production of national forest and private lands and agricultural production in the Sacramento Valley. This classification also includes significant sand and gravel or mineral extraction sites. These types of land are generally committed to long-term management for production of natural resources. For this analysis, lands that are within existing, active agricultural preserves or that are within timber preserve zones or committed to long-term timber production are classified as Open Space for the Managed Production of Resources and are shown in Figure 9-11.

Agricultural Preserves: Agricultural preserves are primarily located in west Placer County in the Sierra Nevada foothills and the Sacramento Valley (Figure 9-3). These lands consist of private agriculture land used for production of agricultural crops and livestock grazing. Agricultural preserves are defined as lands under California Land Conservation Act (Williamson Act) contracts, which have preferential taxation of land in return for continuing agricultural or open space use of the land are not in nonrenewal status. Agricultural preserves that are in nonrenewable status may be expected to be converted to possible nonagricultural land uses after the contract expiration and are therefore classified in the Urban and Other Land Use category (Figure 9-11).

Timberlands: Timberlands occupy the largest area of Placer County, extending generally from I-80 in central Placer County to the Tahoe Basin in eastern Placer County (Figure 9-3). These open space lands encompass public and private land in the Tahoe and Eldorado National Forests. Some private lands


STATE OF CALIFORNIA
COUNTY OF PLACER
1994
Truckee
LAKE TAHOE
COLFAX
AUBURN
LINCOLN
ROCKLIN
LOOMIS
ROSEVILLE
Figure 5-11
Open Space Classifications
LEGEND

within national forest boundaries are designated as timber preserve zones. Besides timber production, these lands are managed for dispersed recreation uses, resource preservation, and mineral extraction.

Open Space Used for Preservation of Natural Resources

A substantial amount of open space in Placer County can be classified as being primarily managed for the preservation of natural and biological resources. This classification overlaps with Open Space for the Managed Production of Resources, but the primary focus of their management is on preservation rather than resource production. Included in this classification is a state game refuge where hunting is precluded in the eastern portion of the county and a large corridor along the national wild and scenic river (Figure 9-11). These preserve lands are also used for recreation purposes. The Lake Tahoe Basin Management Unit of the Tahoe National Forest, which covers the Lake Tahoe Basin, is primarily managed for the preservation of natural resources. No other large formal preserve lands are present in the county, although several experimental forests and the Placer County Grove Sierra Redwoods areas are informally intended to preserve parts of the Tahoe National Forest. The Central Valley Habitat Joint Venture is also beginning a process to study a portion of western Placer County as part of its North American Waterfowl Management Plan for the Central Valley of California. The Central Valley Habitat Joint Venture is considering acquiring a sizable area of Placer and Sutter Counties west of Lincoln and Highway 65 for part of a possible American Basin Open Space Preserve which would take into account the need for agricultural protection, flood control and habitat restoration and enhancement.

Open Space Used for Outdoor Recreation

Areas designated as open space for recreation in Placer County include the Granite Chief Wilderness in the Tahoe National Forest, the Folsom Lake State Recreation Area in southwestern Placer County, and the Auburn State Recreation Area in south-central Placer County (Figure 9-11). Again, this classification overlaps somewhat with open space for the preservation of natural resources. Reservoirs and lakes throughout the county comprise areas where recreation uses are normally concentrated, including Folsom Lake, Camp Far West Reservoir, French Meadows Reservoir, Hell Hole Reservoir, Rollins Reservoir, Sugar Pine Reservoir, and Lake Tahoe.

During winter, a number of private ski areas along the eastern portion of I-80 and State Highway 89 are regional recreation destinations that provide facilities for nordic and alpine skiing (Figure 9-11). During summer, these ski areas are popular group activity areas and provide hiking, mountain biking, and other recreation opportunities.

Unprotected "de facto" Open Space

A significant amount of land in Placer County functions as open space, but is not primarily managed to maintain those open space functions. The Unprotected "de facto" Open Space classification includes private agricultural land that is not within an agricultural preserve or is in "nonrenewal" status and will be removed from agricultural preserves within 10 years of the nonrenewal filing date (see Figure 9-3). This classification also includes isolated, primarily undeveloped, private land that is within or is surrounded by national forest or other public lands for which access and topography present significant constraints to development.

The private land in this classification is mostly located in western Placer County, distant from urban centers or on the western slopes of the Sierra Nevada.

Urban and Other Lands

Land that cannot be classified in one of the open space classifications has been identified as Urban and Other Lands in Figure 9-11. Land in this classification is not considered open space for the purposes of this analysis. This land is generally developed or used for some other primary purpose than those open space purposes mentioned above; however, this classification does contain some open space parks or greenbelts. In addition, extensive land within and surrounding the urbanized parts of the county is currently undeveloped, but can be considered open space only because private property owners are currently managing the land to maintain an open appearance.

Urban open space consists of park and recreation lands within urban or rural communities that are used for both passive and active purposes. This type of open space is located in most cities and communities of Placer County, in an area concentrated primarily along the I-80 corridor and Lake Tahoe Basin (Figure 8-1). Urban open space generally consists of small contiguous parcels of 15-200 acres in neighborhood, community, regional, or linear parks. The County and the ARD currently provide approximately 475 acres of park land for urban open space use. Additional urban open space also is provided throughout the Tahoe Basin. The City of Roseville has also recently dedicated large open areas that could be connected with other existing and planned open space areas. Although the area of Placer County that is used for urban open space is small compared to other open space uses, it serves an important local community function that often cannot be replaced or substituted by other open space uses.

Undeveloped land in the Urban and Other Lands classification may be currently designated in the existing general or community plans for agricultural, forestry, or open space land uses and may be zoned to restrict uses and preserve relatively large lot sizes. Because these lands are generally private property, however, future development or management decisions may preclude maintenance of long-term open space land uses. Unless land in this classification is secured as permanent open space by some institutional commitment, it may be incrementally converted to urban or other land uses.

Existing Open Space Management Plans

The open space lands identified in the above analysis in Placer County are managed by various public agencies and by private property owners. Existing county policy identified in the open space plan is to continue the Williamson Act contract program and other established open space preservation programs, to identify open space resource areas, and to coordinate community planning and development projects with a general open space plan map. This plan also indicates that coordinated efforts to protect open space lands should include other agencies, such as city governments, the U.S. Forest Service, the U.S Bureau of Land Management (BLM), the California Department of Parks and Recreation, the California Department of Fish and Game, the Tahoe Regional Planning Agency, and special recreation and public service districts. Management documents for these agencies include:

- City general plan open space elements,
- special district master plans,
- U.S. Forest Service Tahoe and Eldorado National Forest Management Plans (1990 and 1988),
- BLM land management Plans,

- California Department of Fish and Game Regulations,
- Tahoe Regional Planning Agency Lake Tahoe Basin Regional Plan, and
- California State Park and Recreation Area Master Plans.

OPEN SPACE INVENTORY

A significant amount of land in Placer County may be classified as open space using the methodology discussed above. Figure 9-11 shows the extent and type of open space that currently exists (1992). The total amount of land in the county within one or more of the four open space classifications is approximately 588,000 acres, or approximately 61 percent of the total county area of 960,000 acres. Urban and Other Lands accounts for 32 percent of the total county area, and 7 percent of the area is water surface. The gross acreage of open space in each classification shown in Figure 9-11 is listed in Table 9-13.

TABLE 9-13

OPEN SPACE INVENTORY OF PLACER COUNTY

Acres Designated on 1973 Open Space Map		Acres in 1992 (see Figure 9-11)	
Timber croplands	401,000	Open space used for managed production of	
Agriculture	152,000	natural resources	477,000[a]
Total	553,000	Total	477,000
Greenbelt and open space	160,000	Open space used for preservation of natural resources	34,000[b]
		Open space used for outdoor recreation	65,000[c]
		Unprotected "defacto" open space	66,000[d]
Total	160,000	Total	165,000
Other lands	187,000	Urban and other lands	310,000

[a] This total acreage of Open Space for Managed Production of Natural Resources includes 34,000 acres with a combined classification (see Figure 9-11).

[b] This total acreage of Open Space for Preservation of Natural Resources includes 34,000 acres with a combined classification (see Figure 9-11).

[c] This total acreage of Open Space for Outdoor Recreation includes 18,000 acres with a combined classification (see Figure 9-11).

[d] This total acreage of Unprotected "de facto" Open Space includes 7,000 acres with a combined classification (see Figure 9-11).

Source: Placer County Planning Department, 1973.

This open space inventory can be generally compared to the Open Space and Conservation Plan (1973) as shown in Table 9-13. The open space classification methodology that was used in the Open Space and

Conservation Plan is different from that described above; however, each of the categories used in the 1973 plan can be related to one or more classifications used in the 1992 open space inventory as indicated in Table 9-13. Assuming the 1973 open space plan map represents the approximate distribution actual open space land uses at that time, Table 9-13 provides some indication of changes or trends associated with open space in the county.

The 1973 open space categories of Timber Croplands and Agriculture included a large amount of land that has now been reclassified as Unprotected "de facto" Open Space and Urban and Other Lands. However, most of this land is still classified as Open Space Used for the Managed Production of Natural Resources.

The 1973 catagory of Greenbelt and Open Space is roughly comparable in extent to a combination of Open Space Used for the Preservation of Natural Resources, Open Space Used for Outdoor Recreation and Unprotected "de facto" Open Space; however, these classifications involve some double counting of lands that share more than one classification.

Finally, Table 9-13 indicates a significant increase in the amount of land that is not considered open space. Most of this change is a result of excluding lands that are open and undeveloped, but cannot be actually considered open space, as described above. Urban growth between 1973 and 1992 must also account for some of this change.

9.7 AIR RESOURCES

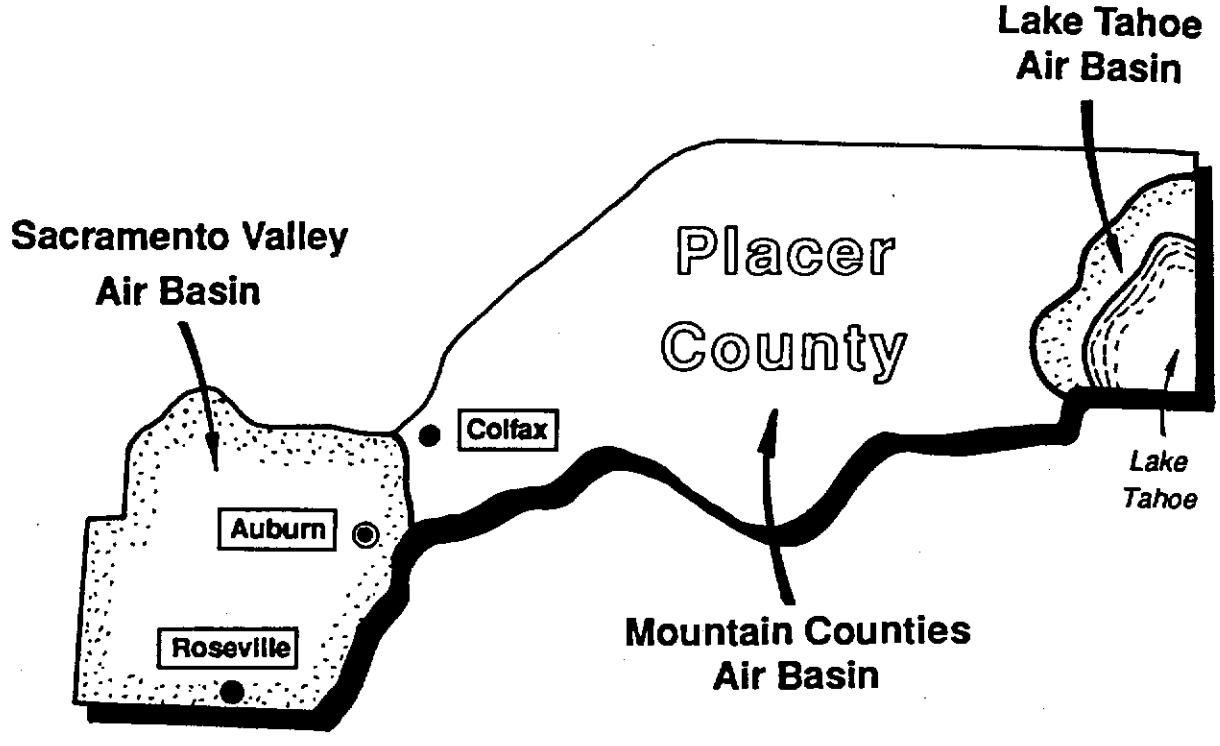
Placer County contains portions of three California air basins: the Sacramento Valley, the Mountain Counties, and Lake Tahoe (Figure 9-12). That portion of Placer County within the Sacramento Valley Air Basin includes all the county west of a point approximately midway between Auburn and Colfax. To the east is the Mountain Counties Air Basin and the valley surrounding Lake Tahoe is classified as a distinct air basin.

CLIMATE AND METEOROLOGY

Each of these air basins have air pollution problems that are influenced by specific meteorological and topographical factors. The prevailing wind direction in the Sacramento Valley portion of Placer County is from the south and southeast, primarily because of marine breezes through the Carquinez Strait (Figure 9-13). During winter, the sea breezes diminish and winds from the north occur more frequently; however, the winds from the south still predominate.

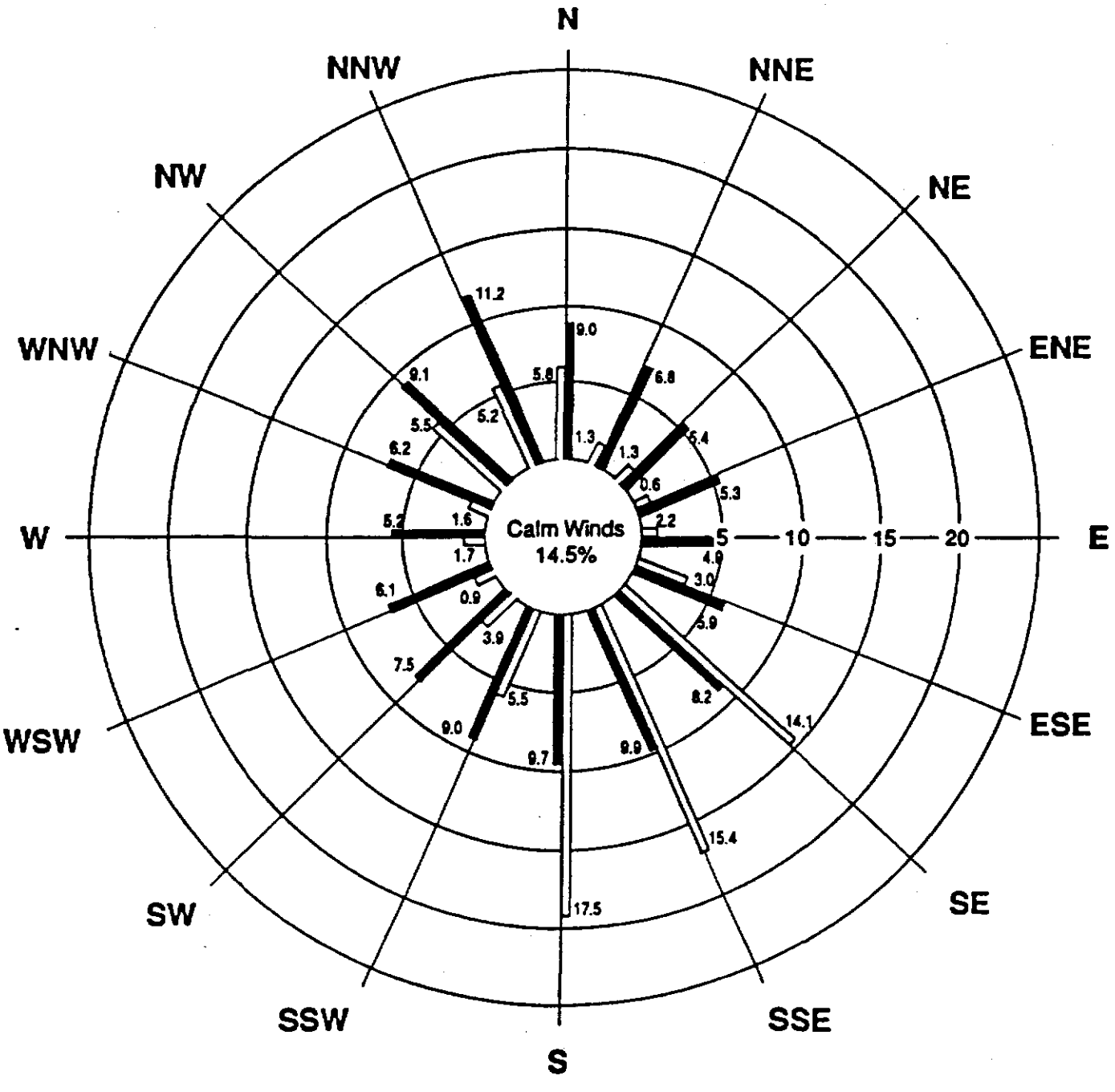
In the Mountain Counties Air Basin, the prevailing wind direction is generally from the south, because winds from the Sacramento Valley are funneled through mountain valleys in the Sierra Nevada. Figure 9-14 shows a windrose for Blue Canyon, located in the portion of the Mountain Counties Air Basin of Placer County.

The climate of the Lake Tahoe Air Basin is strongly influenced by topography. Marine air from the Pacific Ocean drops moisture as it rises over the crest of the Sierra. Because of the dry summer, wet winter precipitation regime of the Sierra Nevada, the cold season corresponds to the wet season in the Lake Tahoe Basin, and most of the precipitation is snow. The most stable atmosphere conditions with



Placer County Air Basins	Emissions Generated Within Placer County
Sacramento Valley	85%
Mountain Counties	12%
Lake Tahoe	3%
	100%

Figure 9-12. Placer County Air Basins



Based on 239,713 hourly observations from 1941 to 1967 at McClellan AFB.

LEGEND

Percent by direction

Mean wind speed

Figure 9-13. Wind Rose Depicting Average Wind Speed and Directional Frequency at McClellan Air Force Base

Source: California Air Resources Board 1984

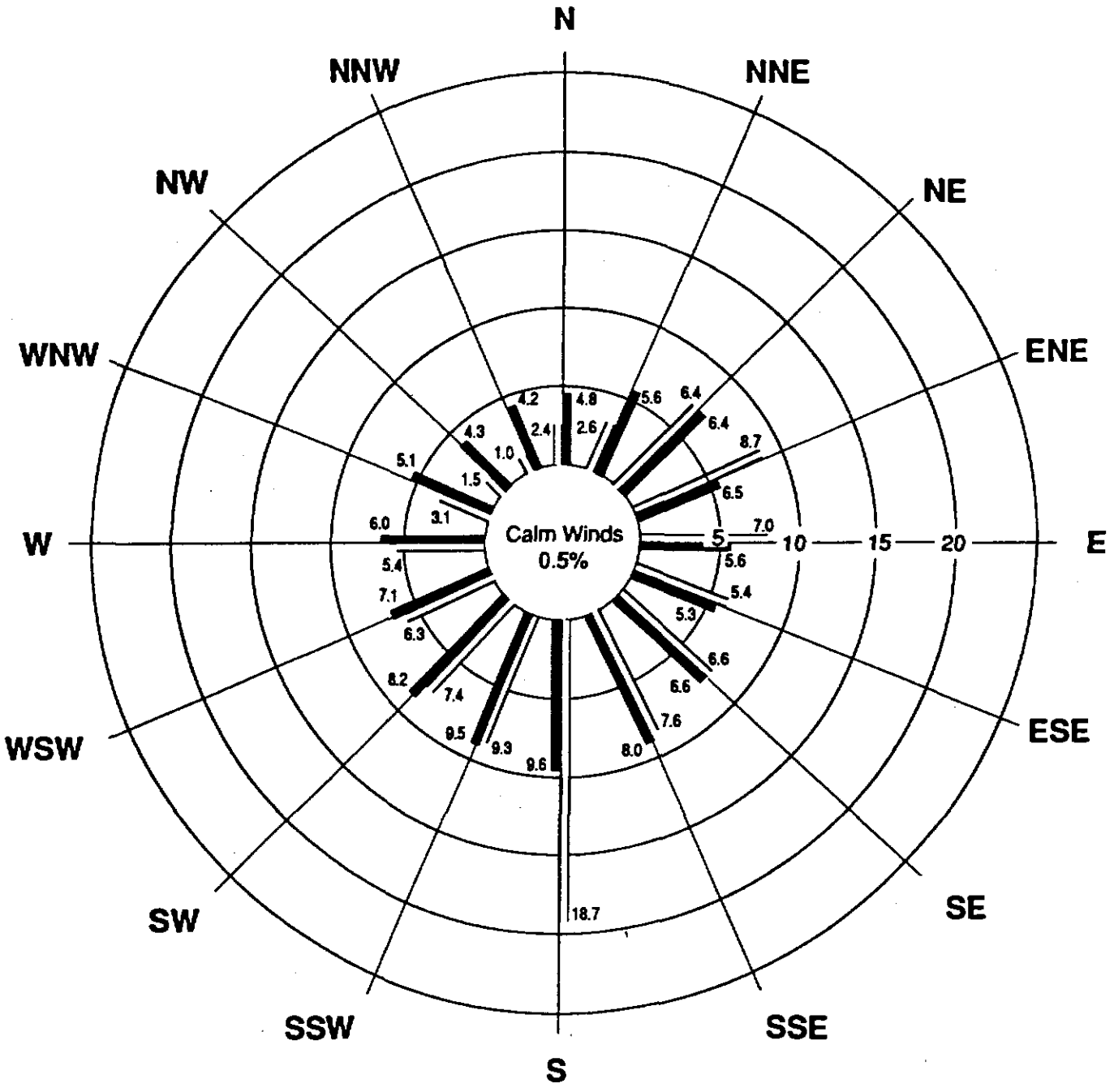


Figure 9-14. Wind Rose Depicting Average Windspeed and Directional Frequency at Blue Canyon

Source: California Air Resources Board 1984.

the best wind movement occur during night and early morning hours in summer and fall. During these periods, locally generated pollutants are trapped within the basin.

In each of these air basins, air pollution problems often develop when calm winds combine with inversions. An inversion is defined as an increase in temperature with height above ground. During inversions, vertical mixing of air ceases. Cessation of horizontal wind is called a calm. Figure 9-13 shows that calm winds occur approximately 14.5 percent of the time in the Sacramento Valley portion of Placer County, but only 0.5 percent of the time at Blue Canyon (Figure 9-14).

Between late spring and early fall, a layer of warm air often overlays a layer of cool air from the Delta and the San Francisco Bay, resulting in an inversion. Typical winter inversions are formed when the sun heats the upper air layers, which traps air below what has been cooled by contact with the colder surface of the earth during the night. Although each inversion type predominates at certain seasons of the year, both types can occur at any time of the year. Local topography produces many variations that can affect the inversion base and influence local air quality.

When calm winds occur with inversions, pollutant concentrations increase over the area. These conditions have a major impact on air pollutant concentrations by trapping pollutants, effectively preventing their dilution and dispersion into the atmosphere.

AMBIENT AIR QUALITY STANDARDS AND EXISTING PLACER COUNTY AIR QUALITY

The federal Clean Air Act establishes air quality standards for several pollutants and requires areas that violate these standards to prepare and implement plans to achieve the standards by certain deadlines. State and federal air quality standards shown in Table 9-14 are divided into primary standards, designed to protect the public health, and secondary standards, designed to prevent visibility reduction, soiling, nuisance, and other damage.

Table 9-15 summarizes Placer County's state and federal attainment status for the criteria pollutants. Portions of Placer County are classified as nonattainment areas for the state and federal ozone standards, and all of Placer County is a nonattainment area for the state particulates (PM_{10}) standards[1]. The Placer County area is unclassified for carbon monoxide (CO) because no monitoring is conducted for CO in Placer County.

The following discussion focuses on the ambient standards for ozone, carbon monoxide, and PM_{10} for the following reasons:

- Placer County's air quality exceeds the allowable ambient state standards for PM_{10} and ozone;
- the Placer County 1991 air quality attainment plan does not project an attainment date for the ozone or PM_{10} standards; and
- projected increases in Placer County's population, vehicle trips, and vehicle miles traveled could result in excessive CO concentrations in urbanized parts of the county.

[1]PM_{10} refers to particulate matter less than 10 microns in diameter.

As a result of the recorded violations of the state and federal ozone standards, the entire Sacramento Valley Air Basin, including that portion within Placer County, has been designated as a nonattainment area for ozone (California Air Resources Board 1989a). In addition, the portion of Placer County within the Mountain Counties air basin also has been classified as an ozone nonattainment area. The nonattainment designation indicates that the ozone levels in Placer County are a potential threat to public health. The entire Lake Tahoe Air Basin is an ozone attainment area.

Figure 9-15 shows current and future year ROG emissions in Placer County, disaggregated by emission source category. Motor vehicles are the primary source of existing ROG emissions. During the next 20 years, however, motor vehicles are expected to be replaced by stationary and area sources as the most important sources of ROG emissions.

Figure 9-16 shows current and projected Placer County NO_x emissions. Motor vehicles will continue to be the primary source of Placer County NO_x emissions.

TABLE 9-14

AMBIENT AIR QUALITY STANDARDS APPLICABLE IN CALIFORNIA

Pollutant	Symbol	Averaging Time	Standard, as ppm		Standard, as $\mu g/m^3$		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	0.12	180	235	if exceeded	if exceeded on more than 3 days in 3 years
Carbon Monoxide (Lake Tahoe Only)	CO	8 hours 1 hour 8 hours	9 20 6	9 35 ---	10,000 23,000 7,000	10,000 40,000 ---	if exceeded if exceeded if exceeded	--- if exceeded on more than one day per year
Nitrogen Dioxide	NO_2	annual average 1 hour	--- 0.25	0.05 ---	--- 470	100 ---	if exceeded ---	--- if exceeded
Sulfur Dioxide	SO_2	annual average 24 hours 1 hour	--- 0.05 0.25	0.03 0.14 ---	--- 131 655	80 365 ---	if exceeded if exceeded ---	--- if exceeded if exceeded on more than one day per year
Hydrogen Sulfide	H_2S	1 hour	0.03	---	42	---	if equaled or exceeded	---
Vinyl Chloride	C_2H_3Cl	24 hours	0.010	---	26	---	if equaled or exceeded	if equaled or exceeded
Particulate Matter, 10 microns or less	PM10	annual geometric mean annual arithmetic mean 24 hours	--- --- ---	--- --- ---	30 --- 50	--- 50 150	if exceeded --- if exceeded	--- if exceeded if exceeded on more than one day per year
Sulfate Particles	SO_4	24 hours	---	---	25	---	if equaled or exceeded	---
Lead Particles	Pb	calendar quarter	---	---	1.5	1.5	if equaledor exceeded	if exceeded on more than one day per year

Notes:	ppm = parts per million by volume. ug/m 3 = micrograms per cubic meter.
	All standards are based on measurements at 25 degrees C and 1 atmosphere pressure. National standards shown are the primary (health effects) standards. The California 24-hour standard for SO_2 applies only when state O_3 or PM10 standards are being violated concurrently.

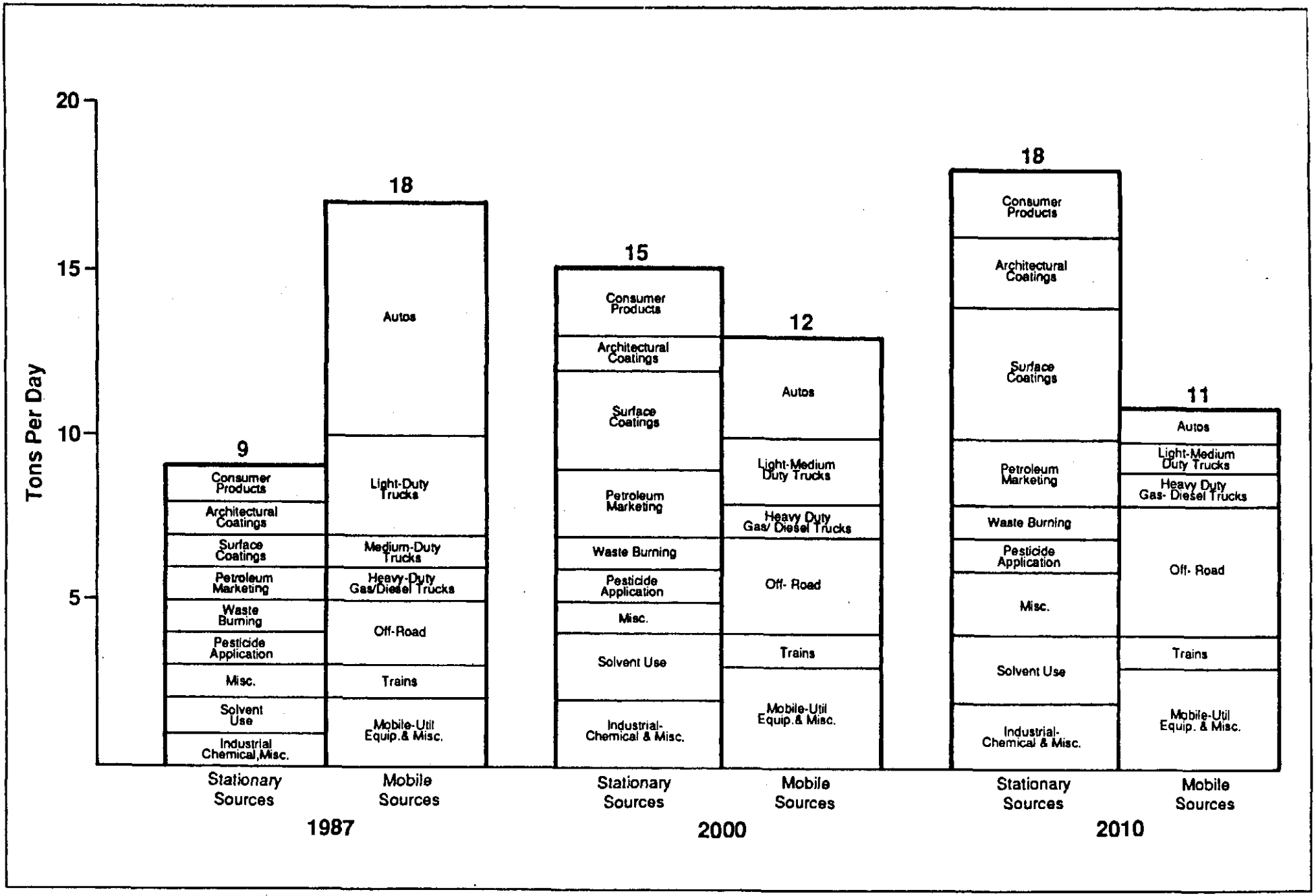


Figure 9-15. Sources of Placer County Ozone Precursor Reactive Organic Gasses (ROG)

Source: Placer County Air Pollution Control District 1991

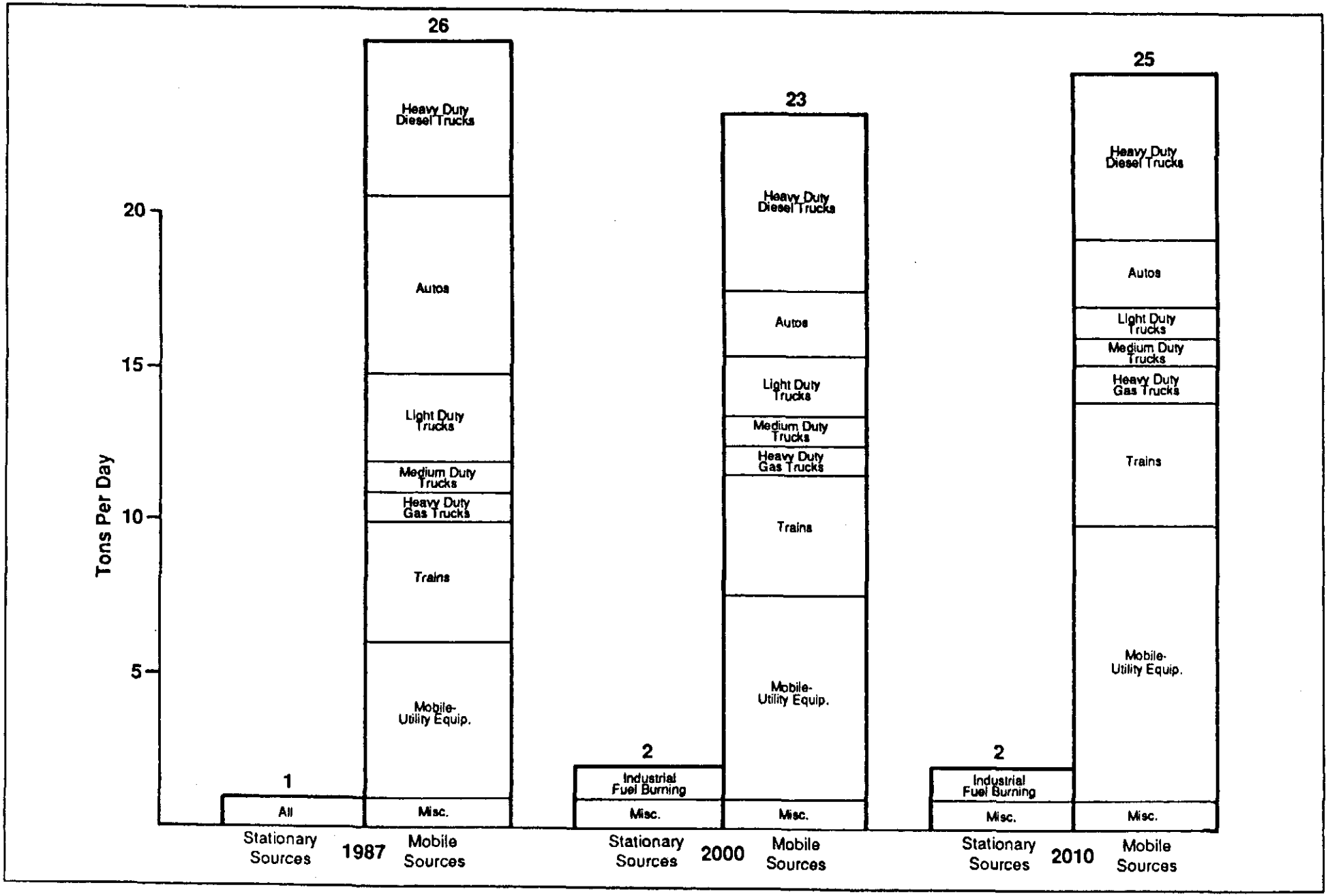


Figure 9-16. Sources of Ozone Precursor Oxides of Nitrogen (NOx)

Source: Placer County Air Pollution Control District 1991

TABLE 9-15

CRITERIA POLLUTANT ATTAINMENT STATUS FOR PLACER COUNTY

Pollutant	Ambient Standards	
	California	Federal
Ozone	Nonattainment[1]	Nonattainment
Carbon monoxide	Unclassified	Unclassified
Nitrogen dioxide	Attainment	Unclassified
Sulfur dioxide	Attainment	Attainment
PM10	Nonattainment	Attainment

Note: Unclassified designations indicate that sufficient monitoring data are unavailable. Unclassified areas are generally treated as attainment areas.

[1] The Lake Tahoe air basin, which includes a portion of Placer County, is classified as an attainment area.

Source: California Air Resources Board 1989a.

Ozone Precursors

Ozone is a public health concern because ozone is a respiratory irritant that increases human susceptibility to respiratory infections. Ozone causes substantial damage to leaf tissues of crops and natural vegetation and damages many materials by acting as a chemical oxidizing agent.

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROG) and nitrogen oxides (NO_x). The period required for ozone formation allows the reacting compounds to be spread over a large area, producing a regional pollution problem. Ozone problems are the cumulative result of regional development patterns, rather than the result of a few significant emission sources.

The state 1-hour ozone standard of 0.09 parts per million (ppm) is not to be exceeded. The federal 1-hour ozone standard of 0.12 ppm is not to be exceeded more than three times in any 3-year period.

Placer County currently has three sites at which ozone concentrations are monitored: two in the Sacramento Air Basin (Rocklin and Auburn) and one in the Mountain Counties Air Basin (Colfax).

The state air quality standard for ozone is exceeded several times a year at all three monitoring stations (Table 9-16). The federal ozone standard also is exceeded at these stations during most years.

TABLE 9-16

SUMMARY OF OZONE AIR QUALITY
Placer County
1986-1990

Monitoring Station/Parameter	Ozone Levels				
	1986	1987	1988	1989	1990
Auburn Dewitt Avenue					
Peak-hour value[a]	0.17	0.18	0.18	0.12	0.15
Hours above standard[b]	117	146	183	44	176
Days above standard[c]	34	39	42	17	39
Colfax - Church Street (4 miles southwest of Roseville)					
Peak-hour value[a]	ND	ND	0.16	0.12	0.16
Hours above standard[b]	ND	ND	149	86	81
Days above standard[c]	ND	ND	39	24	18
Rocklin - Sierra College					
Peak-hour value[a]	0.16	0.13	0.14	0.11	0.15
Hours above standard[b]	116	18	96	25	63
Days above standard[b]	38	10	35	12	18

[a] Parts per million (ppm).
[b] Number of days the state peak-hour standard of 0.09 was exceeded.
[c] Days in which the state peak-hour standard was exceeded 1 or more hours.

Source: California Air Resources Board 1990a.

Carbon Monoxide

CO levels are a public health concern because CO combines readily with hemoglobin to reduce the amount of oxygen transported in the bloodstream. Relatively low concentrations of CO can

significantly affect the amount of oxygen in the bloodstream because CO binds to hemoglobin 220-245 times more strongly than oxygen. Both the cardiovascular system and the central nervous system can be affected when 2.5 percent to 4.0 percent of the hemoglobin in the bloodstream is bound to CO rather than to oxygen. State and federal ambient air quality standards for CO have been set at levels intended to keep CO from combining with more than 1.5 percent of the blood's hemoglobin (U.S. Environmental Protection Agency 1978, California Air Resources Board 1982).

State and federal CO standards have been set for both 1-hour and 8-hour averaging periods. The state 1-hour CO standard is 20 ppm by volume, and the federal 1-hour CO standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period. State CO standards are phrased as values not to be exceeded; federal CO standards are phrased as values not to be exceeded more than once per year.

No CO monitoring stations are located in Placer County. Table 9-17 shows CO monitoring results for the Sunrise Avenue monitoring station in Citrus Heights, located just south of Roseville in Sacramento County. That station monitored no violations of the CO standard during the past 6 years. Because no CO monitoring stations are located in Placer County, the entire county has been designated as unclassified for CO (California Air Resources Board 1989a).

Excessive CO concentrations are primarily a winter pollution problem that can be strongly localized. Motor vehicle emissions are the dominant source of CO in most areas. As a directly emitted pollutant, transport away from the emission source is accompanied by dispersion and reduced pollution concentrations. Consequently, CO problems usually are located near congested intersections, often resulting from high traffic volumes and traffic congestion.

TABLE 9-17

SUMMARY OF CARBON MONOXIDE AIR QUALITY MONITORING DATA
Placer County

Monitoring Station/Parameter	Carbon Monoxide Level					
	1985	1986	1987	1988	1989	1990
Citrus Heights-Sunrise Boulevard (2 miles south of Roseville)						
Peak-hour value[a]	9.0	11.0	8.0	10.0	9.0	10.0
Peak 8-hour value[a]	2.5	6.0	5.0	7.0	3.0	6.5
Days above standard[b]	0	0	0	0	0	0

[a] Parts per million (ppm).

[b] Days with a peak 8-hour average exceeding the federal and state CO standards of 9 ppm.

Source: California Air Resources Board 1990a.

Outdoor CO levels are a fairly reliable indicator of potential indoor CO levels. Because CO is not chemically reactive and is poorly soluble in water, it is not adsorbed onto surfaces or otherwise altered as it enters open doorways, open windows, or building ventilation systems.

Data from previous studies suggest that CO problems occur primarily near traffic arteries having significant amounts of commercial development. The presence of significant commercial development is an important contributing factor for two reasons. Parking lots for such developments are a localized source of emissions, which augments the CO emissions from vehicle traffic on adjacent roadways. Additionally, vehicles leaving major parking lots are likely to be in a cold-start mode, resulting in higher CO emission rates than is typical for through traffic on major roadways.

Meteorological conditions are also a significant factor affecting the development of CO problems. High CO levels develop primarily during winter when periods of light winds or calm conditions combine to form ground-level temperature inversions (typically in the evening through early morning). These conditions result in reduced dispersion of vehicle emissions, allowing CO problems to develop and persist during hours when traffic volumes are declining from peak levels. Motor vehicles also exhibit increased CO emission rates at cool air temperatures.

Particulates

Health concerns associated with suspended particles focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs. Both the federal and state air quality standards for particulate matter apply only to these small particles designated PM_{10}.

State and federal PM_{10} standards have been set for 24-hour and annual averaging periods. The state 24-hour PM_{10} standard is 50 micrograms per cubic meter ($\mu g/m^3$) and the federal 24-hour standard is 150 $\mu g/m^3$. The state annual PM_{10} standard is 30 $\mu g/m^3$ on an annual geometric mean, and the federal annual PM_{10} standard equals 50 $\mu g/m^3$ on an annual arithmetic mean[2]. Federal and state 24-hour PM_{10} standards are not to be exceeded more than 1 day per year, but both annual standards are not to be exceeded.

Table 9-18 shows PM_{10} monitoring results for four stations in Placer County: one in Colfax and three in the Sacramento Valley Air Basin. Each of these stations has recorded violations of the 24-hour PM_{10} standard and three of the four stations have recorded violations of the annual PM_{10} standard during the past 5 years.

Violations of the California PM_{10} ambient standard have resulted in the entire Sacramento Valley air basin, including the Placer County portion, being classified as a PM_{10} nonattainment area (California Air Resources Board 1989a). In addition, the Mountain Counties Air Basin, including Placer County, is a PM_{10} nonattainment area. Also, the entire Lake Tahoe Air Basin, including the Placer County portion, is classified as a PM_{10} nonattainment area.

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[2]Arithmetic mean is the sum of the total observations divided by the number of observations. Geometric mean equals the nth root of the product of n observations.

Table 9-19 shows that Placer County PM_{10} emissions are generated by pollutants in the miscellaneous source category. The primary sources of PM_{10} (within the miscellaneous sources category) are airborne dust particles from vehicle travel and construction and demolition activities.

TABLE 9-18

SUMMARY OF PM_{10} AIR QUALITY MONITORING DATA ($\mu g/m^3$)

Monitoring Station/Parameter	PM_{10} Level				
	1986	1987	1988	1989	1990
Rocklin - Sierra College					
Peak 24-hour average - 2nd highest	52	58	67	66	51
Annual geometric mean	28.4	27.8	35.8	28.7	23.4
Lincoln					
Peak 74 2nd	ND	ND	93	69	84
Annual geometric mean			34.2	31.1	31.9
Auburn - Dewitt - C Avenue					
Peak 24-hour average - 2nd highest	ND	ND	69	47	50
Annual geometric mean	ND	ND	26.8	24.1	239
Colfax					
Peak 24 2nd	ND	ND	ND	43	61
Annual geometric mean	ND	ND	ND	31.6	29.6

Notes: ND = no data available.

State PM_{10} standards are 50 $\mu g/m^3$ for the 24-hour average and 30 $\mu g/m^3$ for the annual average (geometric mean).
Federal PM_{10} standards are 150 $\mu g/m^3$ for the 24-hour average and 50 $\mu g/m^3$ for the annual average (arithmetic mean).

Source: California Air Resources Board 1990a.

TABLE 9-19

PM_{10} INVENTORY FOR PLACER COUNTY
Average Daily Emissions Per Ton

Source Category	1987	1995	2005
Fuel combustion	0.8	0.74	0.9
Waste burning	0.8	1.08	1.31
Solvent use	--	--	--
Petroleum processing	--	0.01	0.01
Industrial processes	0.5	0.6	0.74
Farming operations	1.0	1.78	2.13
Construction and demolition	4.5	7.26	8.98
Entrained road dust - paved	9.4	11.06	13.64
Entrained road dust - unpaved	3.0	2.81	3.45
Unplanned fires	2.8	0.02	0.02
Total stationary	**22.8**	**25.36**	**31.18**
On-road vehicles	1.2	1.02	1.09
Other mobile	0.4	0.48	0.51
Total mobile	**1.6**	**1.5**	**1.6**
Total Placer County	24.4	26.86	32.78

Note: PM_{10} = particulate matter or dust particles less than 10 microns in diameter.

Sources: California Air Resources Board 1990c, 1989b.

EXISTING AIR QUALITY MANAGEMENT IN PLACER COUNTY

The Placer County Air Pollution Control District (PCAPCD), headquartered in Auburn, is responsible for maintaining and improving air quality throughout Placer County. Although the PCAPCD has primary responsibility for air quality in Placer County, many agencies are involved in air pollution control, including the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), and the Sacramento Area Council of Governments (SACOG). Table 9-20 summarizes the historical responsibilities of the agencies involved in air quality management. The duties of these agencies have been recently modified by two new laws:

- the California Clean Air Act of 1988 (CCAA) and
- the federal Clean Air Act Amendments of 1990.

Each law specifies deadlines for submitting air quality attainment plans, which must contain specific measures designed to achieve the ambient air quality standards. Many of the required measures apply to general plan update efforts of Placer County.

TABLE 9-20

AGENCY RESPONSIBILITIES PRIOR TO IMPLEMENTATION OF THE CALIFORNIA CLEAN AIR ACT

U.S. Environmental Protection Agency (EPA)
- Establish national ambient air quality standards
- Require preparation of plans to meet the standards
- Impose sanctions when plans are not met
- Establish mobile source controls
- Develop guideline documents for controlling air emissions

California Air Resources Board (ARB)
- Establish state air quality standards
- Maintain oversight authority in air quality planning
- Develop programs for reducing emissions from motor vehicles
- Develop air emissions inventories
- Collect air quality and meteorological data
- Approve air district prepared state implementation plans

Placer County Air Pollution Control District (APCD)
- Permit stationary sources
- Maintain emissions inventories
- Maintain air quality stations
- Oversee agricultural burning permits
- Review air quality related sections of environmental documents required by CEQA

Sacramento Area Council of Governments (SACOG)
- Take lead role in preparing the State Implementation Plan for the Sacramento Air Quality Maintenance Area

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California Clean Air Act of 1988

CCAA focuses on attainment of the state ambient air quality standards that, for certain pollutants and averaging periods, are more stringent than the comparable federal standards (Table 9-14). CCAA

requires designation of attainment and nonattainment areas according to state ambient air quality standards (Table 9-15).

CCAA substantially added to the authority and responsibilities of California's air districts. CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. CCAA emphasizes the control of "indirect and areawide sources" of air pollutant emissions.

The act requires that air districts prepare an air quality attainment plan if the district violates state air quality standards for CO, sulfur dioxide, nitrogen dioxide, or ozone. No locally prepared attainment plans are required for areas that violate the state PM_{10} standards.

The act requires that the state air quality standards be met as expeditiously as practicable, but (unlike the federal Clean Air Act) does not set precise attainment deadlines. Instead, the act establishes increasingly stringent requirements for areas that will require more time to achieve the standards. The least stringent requirements are set for areas that expect to achieve air quality standards by the end of 1994. The most stringent requirements are set for areas that cannot achieve the standards until after 1997.

Transportation control measures are defined in CCAA as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing vehicle emissions." The CCAA does not define "indirect and areawide sources". Section 110 of the federal Clean Air Act, however, defines an indirect source as "a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution." This term includes parking lots, parking garages, and other facilities that affect the management of parking supply (Federal Clean Air Act Amendments of 1990).

PCAPCD recently published its first air quality attainment plan for public review (Placer County Air Pollution Control District 1991). This plan, required by CCAA, is designed to bring Placer County into compliance with the state ozone standards, which are equal to or more stringent than existing federal ambient standards. Because PCAPCD's air attainment plan does not project attainment of the state ozone standard by 1997, Placer County is considered a severe nonattainment area for ozone. CCAA lists several actions (Table 9-21) that must be taken if an area is classified as severe.

TABLE 9-21

CALIFORNIA CLEAN AIR ACT REQUIREMENTS FOR AREAS CLASSIFIED AS SEVERE

General Provisions
- Emissions tracking system
- Regional public education program
- Reduction in districtwide emissions by 5% per year using 1987 as the baseline

Stationary Sources
- "Best Available Retrofit" controls on existing sources
- No net increase in emissions from all new permitted sources

Transportation Sources
- Transportation control measures (TCMs) to significantly reduce the rate of increase in vehicle travel
- Indirect and area source control programs
- Measures resulting in no net increase in vehicle emissions after 1997
- TCMs to achieve 1.5 average vehicle ridership from all travel during commute periods by 1999

PCAPCD's 1991 air quality attainment plan contains several strategies for bringing Placer County into compliance with the California ambient ozone standards, such as reducing emissions from both stationary and mobile source emissions. For stationary sources, the plan would lower the best available control technology (BACT) and emission offset thresholds from 250 pounds per day to 0 pounds per day, effective July 1, 1991 (Placer County Air Pollution Control District 1991)[3].

The plan also contains several additional stationary source controls for reducing emissions. Those applicable to the proposed Placer County General Plan update include 15 energy conservation strategies to reduce fossil fuel combustion. These strategies include improved insulation of structures, enhanced solar heating features in new construction, and orientation of new streets and structures to maximize solar exposure.

PCAPCD's air quality attainment plan also contains seven transportation control measure (TCM) recommendations shown in Table 9-22. These strategies range from areawide carpool/vanpool matching and assistance to improved bikeways.

[3]Best Available Control Technology (or BACT) is essentially an emission limitation based on the maximum degree of reduction technologically possible for each pollutant emitted by a source. Emission offsets are credits obtained from another emission source that compensate for some or all of the emissions from the emission source in question.

TABLE 9-22

TRANSPORTATION CONTROL MEASURE RECOMMENDATIONS INCLUDED IN THE PCAPCD AIR QUALITY ATTAINMENT PLAN

- Areawide carpool/vanpool matching and assistance
- City and/or county trip reduction ordinance
- Employer-sponsored carpool/vanpool/buspool program
- Staggered work schedules, flexible hours, and compressed work weeks
- Suburban park-and-ride lots
- Improved bikeways
- Public awareness and education about the causes of air pollution in Placer County

In addition to TCMs listed in Table 9-22, the air attainment plan contains additional TCM measures to be considered useful for meeting future air quality requirements. These additional TCMs are listed in Table 9-23.

TABLE 9-23

ADDITIONAL TCMs TO BE CONSIDERED IN PLACER COUNTY

1991-1994

- Telecommuting and teleconferencing
- Alternate motor fuels and energy sources
- Jobs-housing balance
- Mixed land use requirements

Post 1994

- Transit service expansion, operational changes, and fare policy
- Automobile restricted periods
- Freeway high-occupancy vehicle (HOV) lanes
- Signal system improvements, roadway improvements, and vehicle operation restrictions
- Freeway control/ramp metering
- Pricing to discourage automobile parking
- Parking supply limits
- Fringe area park-and-ride lots
- Expansion of light-rail transit

PCAPCD's air plan also contains indirect source control measures. Table 9-24 lists the near-term and midterm indirect source control measures found in the PCAPCD air attainment plan. The last indirect source control measure included in Table 9-23, multimodal transit centers for light rail, was specifically designed for Roseville.

TABLE 9-24

NEAR-TERM AND MID-TERM INDIRECT SOURCE CONTROL MEASURES IN THE PLACER COUNTY AIR QUALITY ATTAINMENT PLAN

Near-Term (1991-1993)

- Enhanced environmental document reviews
- Indirect source review framework development

Mid-Term (1994-1996)

- Parking space emission fee
- Parallel arterials at peak hours
- Home occupation
- Multimodal transit centers with light rail

Source: Placer County Air Pollution Control District 1991.

Finally, the PCAPCD air quality attainment plan also states that major planning documents such as general plans should contain references and provide support to PCAPCD and regional efforts to achieve clean air.

Federal Clean Air Act Amendments of 1990

Although PCAPCD has primary responsibility for implementing the CCAA in Placer County, SACOG has been responsible for preparing state implementation plans (SIPs) required by the federal Clean Air Act for the Sacramento Air Quality Maintenance Area (AQMA). The Sacramento AQMA includes all of Sacramento County and portions of Yolo, Placer, and Solano Counties.

The 1990 Regional Interim Air Quality Plan (Interim Plan) was prepared by SACOG for the Sacramento AQMA (Sacramento Area Council of Governments 1990). This Interim Plan contains an evaluation of land use emission control strategies, ranks control strategies according to effectiveness, and calls for cooperation by cities and counties through adoption of assigned emission control measures. The Placer County air attainment plan incorporates background information and identified land use control measures from the Interim Plan.

The federal Clean Air Act Amendments of 1991 require that a new Sacramento AQMA ozone SIP be submitted to EPA by 1994. CARB has decided that the air districts will be responsible for the preparation of future SIPs, with SACOG taking a support role in that preparation. Consequently,

PCAPCD, the Sacramento Metropolitan Air Quality Management District, and the Yolo-Solano Air Pollution Control District will have to coordinate efforts to prepare the 1994 SIP for the Sacramento AQMA.

By 1996, each AQMA must demonstrate whether current aggregate vehicle mileage, aggregate vehicle emissions, and congestion levels are consistent with those included in the 1994 SIP submittal. If these parameters (mileage, emissions, and congestion) exceed the levels used in the SIP, then CARB must, with air district support, prepare and submit to EPA within 18 months a SIP revision and include transportation control measures including those shown in Table 9-25.

TABLE 9-25

TRANSPORTATION CONTROL MEASURES REQUIRED FOR SIPs BY THE FEDERAL CLEAN AIR ACT AMENDMENTS OF 1990

- Public transit improvements
- HOV lanes
- Employer-based transportation management plans
- Trip reduction ordinances
- Traffic flow improvements that reduce emissions
- Park-and-ride lots
- Vehicle-use restrictions in downtown areas during peak-flow periods
- All forms of high-occupancy shared-ride services
- Limiting roads and metropolitan areas to nonmotor vehicle and pedestrian uses
- Bicycle lanes and storage facilities
- Control of extended vehicle idling
- Reduction of emissions from extreme cold starts
- Employer-sponsored flexible work schedules
- Facilitating mass transit and minimizing single-occupant vehicle use
- Construction of pedestrian and nonmotorized paths and tracks
- Voluntary removal of pre-1980 light-duty vehicles and trucks

Source: PL 101-549, November 15, 1990.

9.8 FINDINGS

- Placer County has abundant water resources. Surface and groundwaters are generally of very high quality.
- Development of water resources may be affected by efforts to protect biological resources, including wetlands, fisheries, and Sacramento Delta and San Francisco Bay water quality.
- Urban runoff and sedimentation associated with urban development is expected to degrade water quality on a cumulative basis.
- The best soils and most productive farmlands are located in the low-lying lands west of Auburn.
- Agricultural production occurs up to the 3,500-foot elevation, with orchards located in the foothills and field crops located in the valley.
- The amount of land in Placer County under the protection of Williamson Act contracts is diminishing rapidly.
- Timber production in Placer County remained strong during the 1980s, but may decrease in the future as state and federal agencies that manage much of the county's commercial timberlands take actions to protect wildlife habitats and resources.
- The major mining activity in Placer County is sand and gravel extraction, while clay, stone, and gold are produced to a lesser extent.
- The existing and future mining and reclamation activities on federal lands in Placer County could have substantial effects on the adjacent county lands.
- Some mining operations in Placer County predate the requirements for mining and reclamation plans and may be surrounded by incompatible land uses.
- According to the Placer County Air Pollution Control District (PCAPCD), emissions of ROG and NO_x pollutants are expected to drop slightly between 1987 and 1994, then slowly increase.
- The California Clean Air Act requires emissions to be reduced by 5 percent per year starting in 1987.
- ROG and NO_x emission controls proposed by the PCAPCD will not be sufficient to clean up the air in Placer County. No single control or strategy is enough to solve the problem. A series of aggressive widespread steps would be necessary to reduce emissions of stationary and mobile source emissions to meet the requirements of the California Clean Air Act.
- Placer County contains a large and diverse open space resource, including urban open space, agricultural land, timberland, natural resource preserves, and recreation areas.

- Significant areas of western Placer County could be converted from agricultural open space to urban or suburban land uses when nonrenewed Williamson Act contracts expire.

- The United States Fish and Wildlife Service (USFWS) is currently studying a part of western Placer County for inclusion in a possible American Basin Open Space Preserve.

- Recreation open space areas are managed by a variety of federal, state, local, and private entities throughout Placer County. Other open space types also regularly serve some recreation function.

- Placer County has diverse biological resources because of its diverse topographic features, soils, and climate.

- Urban and agricultural development have resulted in the loss of wetlands, particularly vernal pools, in the grasslands surrounding Roseville, Rocklin, Loomis, and Lincoln. The loss of these wetlands is contributing to the decreased number of special-status species in the county.

- Agriculture, urban development, fuelwood harvesting, and range activities have contributed to the degradation and loss of woodlands, particularly valley oak and blue oak woodlands. In response to statewide losses, the California Department of Forestry and Fire Protection, the California Native Plant Society, and the Nature Conservancy have identified the conservation and management of oak woodlands as important issues.

- Riparian habitats have been lost and degraded because of water diversion and impoundment projects. This loss and degradation has contributed to the population declines for special-status species dependent on riparian habitats and has disrupted migration corridors for other species.

- Urban development in the foothills is resulting in the loss and degradation of migratory deer winter range, particularly in hardwoods and conifer forests.

- Timber harvesting has reduced the area of old-growth forests, resulting in the decline of associated species of wildlife, inlcuding the California spotted owl, pileated woodpecker, northern goshawk, pine martin, and fisher.

- Fire suppression has disrupted natural ecological processes, resulting in the accumulation of fuel and contributing to larger and hotter wildfires. This degrades wildlife habitat in chaparral and conifer forests.

- Development of winter recreation facilities has degraded and fragmented habitat for alpine and subalpine species.

- Threatened Lahontan cutthroat trout are found in Truckee water basin.

- Increased urban runoff may be detrimental to fisheries as a whole or decrease the success of native fish species.

- Migratory and resident deer populations are an important economic resource to Placer County.

9.9 PERSONS CONSULTED

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9.11 GLOSSARY

Agricultural Preserve - Land designated for agriculture or conservation (see "Williamson Act")

Agriculture - Use of land for the production of food and fiber, including the growing of crops and/or the grazing of animals on natural, prime, or improved pastureland

AQMA - Air Quality Maintenance Area

Air Pollution - Concentrations of substances in the atmosphere that exceed naturally occurring quantities and are detrimental to human health or welfare.

Alpine - Habitats at high altitudes, particularly above timberline

Ambient - Surrounding on all sides; used to describe measurements of existing conditions for traffic, noise, air, and other environments

Artesian - An aquifer in which water is confined under pressure between layers of impermeable material; wells tapping into an artesian stratum will flow naturally without the use of pumps (see "Aquifer")

BACT - Best available control technology

BLM - U.S. Bureau of Land Management

CCAA - California Clean Air Act of 1988

CDC - California Department of Conservation

SMARA - California Surface Mining and Reclamation Act

ARB - California Air Resources Board

Carbon Dioxide - A colorless, odorless gas formed during respiration, combustion, and organic decomposition

Carbon Monoxide - A colorless, odorless, highly poisonous emission from incomplete combustion of carbon compounds such as gasoline

CO - Carbon monoxide

Chaparral - Vegetation characterized by thick-leaved and drought-resistant shrubs adapted to wildfires

Conifer - A cone-bearing tree, often evergreen, and frequently harvested for lumber

Conservation Element - One of the seven state-mandated elements of a local general plan; it contains adopted goals, policies, and implementation programs for the conservation, development, and use of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources

Deciduous - A plant that seasonally drops its leaves and enters a state of dormancy

Diversion - The direction of water in a stream away from its natural course (e.g., a diversion that removes water from a stream for human use)

Diversity - The number and types of species and individuals in an area

Easement, Conservation - A method for acquiring open space with less than full-fee purchase, whereby a public agency buys only certain specific rights from the land owner; these may be positive rights (providing the public with the opportunity to hunt, fish, hike, or ride over the land) or they may be restrictive rights (limiting the uses to which the land owner may devote the land in the future)

Easement, Scenic - A tool that allows a public agency to use an owner's land for scenic enhancement, such as roadside landscaping or vista preservation

Emission Standard - The maximum amount of pollutant legally permitted to be discharged from a single source, either mobile or stationary

Endangered Species - A species of animal or plant whose prospects for survival and reproduction are in immediate jeopardy from one or more causes

Even-aged - A collection of organisms with similar ages

Evergreen - A plant whose leaves remain green all year

FR - Federal Register

Groundwater - Water under the earth's surface, often confined to aquifers capable of supplying wells and springs

Habitat - The physical location or environment in which an organism or biological population lives or occurs

Herbaceous - Resembling an herb

Holding area - An area where migratory animals temporarily stop during seasonal migrations

Hydrocarbons - A family of compounds containing carbon and hydrogen in various combinations that are emitted into the atmosphere from manufacturing, storage and handling, or combustion of petroleum products and through natural processes; certain hydrocarbons react with nitrogen oxides in the presence of sunlight to form ozone

Impervious Surface - Surface through which water cannot penetrate, such as roof, road, sidewalk, and paved parking lot; the amount of impervious surface increases with development and establishes the need for drainage facilities to carry the increased runoff

Intermittent Stream - A stream that normally flows for at least 30 days after the last major rain of the season and is dry most of the year

Land Banking - The purchase of land by a local government for use or resale at a later date; "banked lands" have been used to develop low- and moderate-income housing, expand parks, and develop industrial and commercial centers; federal rail-banking law allows railroads to bank unused rail corridors for future rail use and allows interim use for trails

Microclimate - The climate of a small, distinct area, such as a city street or a building's courtyard; can be favorably altered through functional landscaping, architecture, or other design features

$\mu g/m^3$ - micrograms per cubic meter

Mineral Resource - Land on which known deposits of commercially viable mineral or aggregate deposits exist; this designation is applied to sites determined by the California Division of Mines and Geology to be resources of regional significance, and is intended to help maintain the quarrying operations and protect them from encroachment of incompatible land uses

Mining - The act or process of extracting resources, such as coal, oil, or minerals, from the earth

Montane - Mountain areas below the timberline

National Ambient Air Quality Standards - The prescribed concentration of pollutants in the outside air that cannot be exceeded legally during a specified time in a specified geographical area

NDDB - Natural Diversity Data Base

NO_x - nitrogen oxides

Nitrogen Oxide(s) - A reddish brown gas that is a byproduct of combustion and a precursor to ozone formation; often referred to as NO_X, this gas gives smog its "dirty air" appearance

Nonattainment - The condition of not achieving a desired or required level of performance; frequently used in reference to air quality

Open Space Element - One of the seven state-mandated elements of a local general plan, it contains an inventory of privately and publicly owned open space lands, and adopted goals, policies, and implementation programs for the preservation, protection, and management of open space lands

Open Space Land - Any parcel or area of land or water that is essentially unimproved and devoted to an open space use for the preservation of natural resources, the managed production of resources, outdoor recreation, or public health and safety

Ozone - A triatomic form of oxygen (O_3) created naturally in the upper atmosphere by a photochemical reaction with solar ultraviolet radiation; in the lower atmosphere, ozone is a recognized air pollutant that is not emitted directly into the environment, but is formed by complex chemical reactions between oxides of nitrogen and reactive organic compounds in the presence of sunlight, and becomes a major agent in the formation of smog

ppm - Parts per million

Perennial bunch grasses - Grasses that grow in distinctive clumps and last longer than 2 years

PCAPCD - Placer County Air Pollution Control District

Pollutant - Any introduced gas, liquid, or solid that makes a resource unfit for its normal or usual purpose

Pollution - The presence of matter or energy whose nature, location, or quantity produces undesired environmental effects

Pollution, Nonpoint - Sources of pollution that are difficult to identify individually and which usually cover broad areas of land, such as automobiles

Pollution, Point - In reference to water quality, a discrete source such as a sewer outfall, a smokestack, or an industrial waste pipe from which pollution is generated before it enters receiving waters

Preserve - An area in which beneficial uses in their present condition are protected, such as a nature preserve or an agricultural preserve (see "Agricultural Preserve")

Rare or Endangered Species - A species of animal or plant listed in Sections 670.2 or 670.5, Title 14, California Administrative Code; or Title 50, Code of Federal Regulations, Section 17.11 or Section 17.2, pursuant to the Federal Endangered Species Act designating species as rare, threatened, or endangered

ROG - reactive organic gases

Reclamation - The reuse of resources, usually those present in solid wastes or sewage

Interim Plan - 1990 Regional Interim Air Quality Plan

Resources, Nonrenewable - Refers to natural resources, such as fossil fuels and natural gas, which cannot be replaced or used again

Riparian - Vegetation present along watercourses

Runoff - That portion of rain or snow that does not percolate into the ground and is discharged into streams instead

SACOG - Sacramento Area Council of Governments

SIPs - state implementation plans

Savanna - A vegetation type consisting of grasses and widely scattered trees

SNAs - Significant Natural Areas

Siltation - The accumulating deposition of eroded material or the gradual filling in of streams and other bodies of water with sand, silt, and clay

Soil - The unconsolidated material on the immediate surface of the earth created by natural forces that serves as natural medium for growing land plants

Snag - A standing dead or mostly dead tree that is intact or whose top is broken and bark is sloughing off

Storm Runoff - Surplus surface water generated by rainfall that does not seep into the earth but flows overland to flowing or stagnant bodies of water

Subalpine - Immediately below the timberline

TPZs - Timberland Preserve Zone

TCM - transportation control measure

SCS - U.S. Soil Conservation Service

EPA - U.S. Environmental Protection Agency

USFWS - U.S. Fish and Wildlife Service

USFS - U.S. Forest Service

Waters of the United States - Seasonal or perennial waters that do not qualify as wetlands, as defined by the Corps

Watershed - The total area above a given point on a watercourse that contributes water to its flow; the entire region drained by a waterway or watercourse that drains into a lake, or reservoir

Wetland - Areas that are permanently or seasonally wet for a sufficient period to support vegetation typically adapted to saturated conditions

Wildlife Refuge - An area maintained in a natural condition to preserve animal and plant life

Williamson Act - Known formally as the *California Land Conservation Act of 1965*, it was designed to be an incentive to retain prime agricultural land and open space in agricultural use, thereby

slowing its conversion to urban and suburban development; the program entails a 10-year contract between the City or County and an owner of land whereby the land is taxed on the basis of its agricultural use rather than the market value; the land becomes subject to certain enforceable restrictions, and certain conditions must be met before approval of an agreement

Woodland - Stands of trees that are moderately spaced and generally have grasses or shrubs growing under them

APPENDIX 9-A

COMMON AND SCIENTIFIC NAMES OF WILDLIFE MENTIONED IN THE TEXT

Common Name	Scientific Name
Amphibians	
Tiger salamander	*Ambystoma tigrinum*
Long-toed salamander	*Ambystoma macrodactylum*
Western spadefoot	*Scaphiopus hammondi*
Western toad	*Bufo boreas*
Pacific treefrog	*Hyla regilla*
Reptiles	
Racer	*Coluber constrictor*
California mountain kingsnake	*Lampropeltis zonata*
Western aquatic garter snake	*Thamnophis couchi*
Western rattlesnake	*Crotalus viridis*
Mammals	
Virginia opossum	*Didelphis virginiana*
Alpine chipmunk	*Tamias alpinus*
Allen's chipmunk	*Tamias senex*
Yellow-bellied marmot	*Marmota flaviventris*
Belding's ground squirrel	*Spermophilus beldingi*
California ground squirrel	*Spermophilus beecheyi*
Western gray squirrel	*Sciurus griseus*
Fox squirrel	*Sciurus niger*
Douglas' squirrel	*Tamiasciurus douglasii*
Botta's pocket gopher	*Thomomys bottae*
Beaver	*Castor canadensis*
Dusky-footed woodrat	*Neotoma fuscipes*
Coyote	*Canis latrans*
Black bear	*Ursus americanus*
Ringtail	*Bassariscus astutus*
Raccoon	*Procyon lotor*
Long-tailed weasel	*Mustela frenata*
Bobcat	*Lynx rufus*
Mule deer	*Odocoileus hemionus*
Wolverine	*Gulo luscus*
Birds	
Western grebe	*Aechmophorus occidentalis*
Great blue heron	*Ardea herodias*

Black-crowned night-heron	*Nycticorax nycticorax*
Wood duck	*Aix sponsa*
Mallard	*Anas platyrhynchos*
Cinnamon teal	*Anas cyanoptera*
Osprey	*Pandion haliaetus*
Northern harrier	*Circus cyaneus*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Ring-necked pheasant	*Phasianus colchicus*
Blue grouse	*Dendragapus obscurus*
Wild turkey	*Meleagris gallopavo*
California quail	*Callipepla californica*
Band-tailed pigeon	*Columba fasciata*
Mourning dove	*Zenaida macroura*
Belted kingfisher	*Ceryle alcyon*
Acorn woodpecker	*Melanerpes formicivorus*
Hairy woodpecker	*Picoides villosus*
Pileated woodpecker	*Drycopus pileatus*
Horned lark	*Eremophila alpestris*
Steller's jay	*Cyanocitta stelleri*
Scrub jay	*Aphelocoma coerulescens*
Mountain chickadee	*Parus gambeli*
Bushtit	*Psaltriparus minimus*
Red-breasted nuthatch	*Sitta canadensis*
Pygmy nuthatch	*Sitta pygmaea*
Bewick's wren	*Thryomanes bewickii*
Mountain bluebird	*Sialia currucoides*
Northern mockingbird	*Mimus polyglottos*
California thrasher	*Toxostoma redivivum*
European starling	*Sturnus vulgaris*
Orange-crowned warbler	*Vermivora celata*
Rufous-sided towhee	*Pipilo erythrophthalmus*
Dark-eyed junco	*Junco hyemalis*
Red-winged blackbird	*Agelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*
House finch	*Carpodacus mexicanus*

APPENDIX 9-B

COMMON AND SCIENTIFIC NAMES OF PLANTS MENTIONED IN THE TEXT

Common Name	Scientific Name
Grains	
Wildoats	*Avena fatua*
Ripgut brome	*Bromus diandrus*
Saltgrass	*Distichlis spicata*
Spikerush	*Eleocharis* sp.
Redtop	*Agrostis alba*
Cattails	*Typha* spp.
Tule	*Scirpus* spp.
Sedge	*Carex* spp.
Rush	*Juncus* spp.
Annual hairgrass	*Deschampsia danthanoides*
Herbaceous	
Purple-horned downingia	*Downingia bicornuta* var. *bicornut*
Rayless goldfields	*Lasthenia glaberrima*
Marigold navarretia	*Navarretia tagetina*
Duckweed	*Lemna* sp.
Pondweed	*Polygonum* sp.
Miner's lettuce	*Claytonia perfoliata*
Hoary nettle	*Stachys* sp.
California poppy	*Eschscholzia californica*
Popcorn flower	*Plagiobothrys* sp.
Lupine	*Lupinus* spp.
Clover	*Trifolium* spp.
Shrubs	
Manzanita	*Arctostaphylos* spp.
Ceanothus	*Ceanothus* spp.
Chamise	*Adenostoma fasciculatum*
Mountain whitethorn	*Ceanothus cordulatis*
Deer brush	*Ceanothus integerrionus*
Greenleaf manzanita	*Arctostaphylos patula*
Squawcarpet	*Ceanothus prostratus* var. *prost*
Bis sagebrush	*Artemisia tridentacta*
Bitter brush	*Pershia tridentacta*
Rubber rabbitbrush	*Chrysothaminus nauscesus*
Wild-rose	*Rosa californica*
California blackberry	*Rubus ursinus*
Blue elderberry	*Sambucus mexicana*

Wild azalea	*Rhododendron occidentale*
Western choke-cherry	*Prunus clemissa*
Serviceberry	*Amelanchier pallida*; A. *punila*
Mountain misery	*Chamaebatia foliolosa*
Sierra gooseberry	*Ribes roezlii*
Poison-oak	*Toxicodendron diversilobum*
Buckbrush	*Ceanothus cuneatus*
California coffeberry	*Rhamnus californica*
Wood rose	*Rosa gymnocarpa*
Snowberry	*Symphoricarpos rivularis*

Trees

Scrub oak	*Quercus dumosa*
California buckeye	*Aesculus californica*
Giant sequoia	*Sequoiadendron giganteum*
Fremont's cottonwood	*Populus fremontii*
White alder	*Alnus rhombifolia*
Dogwood	*Cornus nuttallii*
Willow	*Salix* spp.
Alder	*Alnus* spp.
Black cottonwood	*Populus balsamifera* ssp. *trichocapa*
Lodgepole pine	*Pinus contorta*
Ponderosa pine	*Pinus ponderosa*
Red fir	*Abies magnifica*
Jeffrey pine	*Pinus jeffreyi*
White fir	*Abies concolor*
Incense-cedar	*Calocedrus decurrens*
Sugar pine	*Pinus lambertiana*
Aspen	*Populus trimuloides*
Blue oak	*Quercus douglasii*
Digger pine	*Pinus sabiniana*
Valley oak	*Quercus lobata*
Canyon live oak	*Quercus chrysolepis* var. *chrysolepi*
Black oak	*Quercus kelloggii*
Tanoak	*Lithocarpus densiflorus* var. *echinoid*
Pacific madrone	*Arbutus menziesii*
California bay	*Umbellularia californica* var. *californica*
Douglas-fir	*Pseudotsuga menziesii*

APPENDIX 9-C

PLANT SPECIES OF SPECIAL CONCERN KNOWN OR WITH THE POTENTIAL TO OCCUR IN PLACER COUNTY

Plant Species	Listing Status* Federal/State/ CNPS/USFS	Habitat Requirements	General Distribution
Bogg's Lake dodder* (*Cuscuta howelliana*)	C3c/--/4/--	Vernal pools in annual grassland areas	Sacramento Valley and encompassing lower foothills
Cusick's speedwell (*Veronica cusickii*)	--/--/4/--	Meadows and seasonally moist areas in subalpine conifer forest	Sierra Nevada and Cascade Ranges
Davy's sedge (*Carex davyi*)	--/--/4/--	Meadows in red fir forest; 4,800-10,600 feet elevation	Sierra Nevada
Giant sequoia* (*Sequoiadendron gigantum*)	--/--/4/--	White fir and big tree coniferous forests (known only from 75 groves)	Calaveras, Fresno, Madera, Mariposa, Placer, Tulare, and Tuolomne Counties
Hoary navarretia (*Navarretia eriocephala*)	--/--/4/--	Dry, open flats of grassland and oak woodlands below 1,000 feet	Sierra foothills from Calaveras County to Placer and Sacramento Counties
Mariposa phacelia (*Phacelia vallicola*)	--/--/4/--	Dry rock outcrops in oak woodland, chaparral, and ponderosa pine and red fir forests; 1,800-7,000 feet elevation	Sierra Nevada from Butte County to Madera County
Sierra corydalis (*Corydalis caseana* ssp. *caseana*)	C3c/--/4/--	Wet meadows and seeps, and coniferous forests	Butte, Lassen, Placer, Plumas, Shasta, Sierra, Tehama, and Tulare Counties
Sierra podistera (*Podistera nevadensis*)	--/--/4/--	Primarily in high-elevation rock outcrops, within alpine dwarf-shrub community; 10,000-13,000 feet elevation	Sierra Nevada from Placer to Tuolumne and Mono Counties, and in San Bernadino County
Starved daisy (*Erigeron miser*)	--/--/4/--	Red fir forest; 6,500-7,500 feet elevation	Placer and Nevada Counties
Valley oak* (*Quercus lobata*)	--/--/4/--	Rich, loamy soils in valley-foothill riparian forest and floodplain below 2,000 feet	Widespread and rather abundant in Central Valley and surrounding Sierra Nevada foothills
Vernal pool brodiaea* (*Dichelostemma lacuna-vernalis*)	C3c/--/4/--	Vernal pools and annual grassland	Amador, Merced, Placer, and Sacramento Counties

* Status explanation (see "Definitions of Special-Status Species" in text for references)

Federal:

C3 = Category 3 includes species that are no longer candidates for federal listing because they are (a) extinct, (b) taxonomically invalid or do not meet the USFWS definition of a "species", or (c) too widespread or not threatened at this time.

State (California Department of Fish and Game):

-- = None

California Native Plant Society (CNPS):

List 4 species: plants of limited distribution--a watch list.

U.S. Forest Service:

-- = None

- Species of special concern with known occurrences in Placer County.

Chapter 10
Safety

CHAPTER 10

SAFETY

10.1 INTRODUCTION

This chapter provides an inventory of safety hazards within the county, including environmental hazards associated with seismic, geological and soils-related conditions, fire, flood, waste disposal, and airport safety.

Background on these safety hazards provides a basis for sound land use planning that reduces unreasonable risks and adequately protects public health and welfare. The issues addressed in this chapter are required components of the Safety Element, which is a mandatory element of the county's general plan.

10.2 SEISMIC AND GEOLOGIC HAZARDS

Seismic and geologic hazards in Placer County result from the potential for surface rupture of faults; ground shaking and liquefaction during earthquakes; landslides resulting from earthquakes, saturation, or gravitation; expansion and shrinking of soils from varying water content; soil erosion; and snow avalanches.

SEISMICITY

Placer County lies within a seismically active area of the western United States but beyond the influence of the highly active faults of coastal California. The western and central portions of the county generally have rather low seismicity, whereas the eastern portion in the vicinity of Lake Tahoe has rather high seismicity and potential for damage (Alfors et al. 1973). Several moderately large earthquakes have occurred within and near eastern Placer County within the historical period, and topographic, structural, and hydrothermal evidence of recent faulting is also present. A detailed discussion of these conditions appears in the Seismic Safety and Safety Elements of the Placer County General Plan of April 1977 (Placer County 1977) and the county planning department's Handbook of Environmental Geology (Livingston 1976).

SURFACE RUPTURE HAZARDS FROM FAULTING

Within the historical period, no rupture of the surface has resulted from faulting associated with earthquakes in Placer County (Jennings 1975). Possible surface rupture along the inferred Stampede Valley fault occurred, however, as close as 5 miles to the county during the Truckee earthquake of 1966 (Jennings 1975). This fault may extend into Placer County (Mualchin and Jones in press) corresponding to faulted Quaternary alluvial deposits south of Truckee (Jennings 1975).

The ground surface disturbance observed after the Truckee earthquake is not completely understood. Although it may represent actual fault rupture at the surface (Jennings 1975), more likely it represents shifting of surface materials from shaking caused by the elastic waves emanating from a deeper fault surface (Hart pers. comm.).

Both the inferred Stampede Valley fault and the Tahoe fault (Figure 10-1) were evaluated in 1990 by the California Division of Mines and Geology (CDMG) for possible designation as fault-rupture hazard zones requiring zoning under the Alquist-Priolo Special Studies Zones Act of 1972 (Hart pers. comm.). For a fault to be so designated, it must be considered sufficiently active and well defined as to constitute a potential hazard to structures from surface faulting or fault creep. CDMG considers Holocene surface displacement to indicate "sufficiently active", and precision and confidence of location allowing successful application of the act to indicate "well defined" (Hart 1990). Although both of these inferred faults are indicated by segments showing Holocene displacement, they do not meet the criteria of "well defined" and were rejected for zoning by CDMG (Hart pers. comm.). Nonetheless, surface rupture possibly could occur during future earthquakes along these inferred faults (Hart pers. comm.).

Two other fault zones indicated on Figure 10-1, the Foothills Fault Zone and the Melones Fault Zone, were reviewed for possible zoning by CDMG in 1983 or 1984. CDMG found well-defined evidence of Holocene faulting to be lacking, although minor offsets were observed of soils that are possibly of Holocene age. These zones also were rejected for hazard zoning. (Hart et al. 1984).

In summary, no inferred faults or fault zones in Placer County are considered well defined enough to warrant designation as hazard zones requiring site-specific studies before land development. Although precise zones cannot be located, the potential for surface rupture during a large earthquake in the Tahoe-Truckee area should not be considered remote.

GROUND-SHAKING HAZARDS

The percentage of total damage attributable to fault rupture during three large earthquakes in California (San Francisco 1906, San Fernando 1971, and Whittier Narrows 1987) ranged from 0 to less than 2%. Ground shaking, however, was responsible for about 80-100% of total damage (Mualchin and Jones in press). Ground shaking can cause severe damage even when causative faulting does not rupture the ground surface.

Ground-Shaking Zonation

The distribution of ground-shaking intensities during an earthquake, measured both as peak ground acceleration and the more subjective "intensity", is a function of several factors. Earthquake magnitude, distance of a site from the focus of the earthquake, attenuation of the earthquake waves between the focus and the site, and the nature of geologic materials and groundwater conditions at the site are the primary factors. Systems have been developed in recent decades to combine these factors to zone regions of interest in terms of differing maximum expected ground shaking.

Microzonation of ground-shaking hazards begins with regional estimates of major fault locations (including lengths), maximum credible magnitudes of earthquakes for each fault, and regional dampening effects. Estimates of maximum ground acceleration throughout the region can be made from such estimates. Such a system was developed for CDMG by Greensfelder (1974) for California, which is described in Placer County's existing seismic safety element. This system is now superseded by a similar system developed for CDMG and Caltrans by Mualchin and Jones (in press), who drew on additional fault and attenuation information developed within the past 15 years.

Mualchin and Jones warn that although their work draws upon the best available evidence of the maximum credible magnitudes for known faults in California and Nevada, it is not based on any assessment of the probability of such large earthquakes occurring in any given year. Thus, maximum

PLACER COUNTY GENERAL PLAN

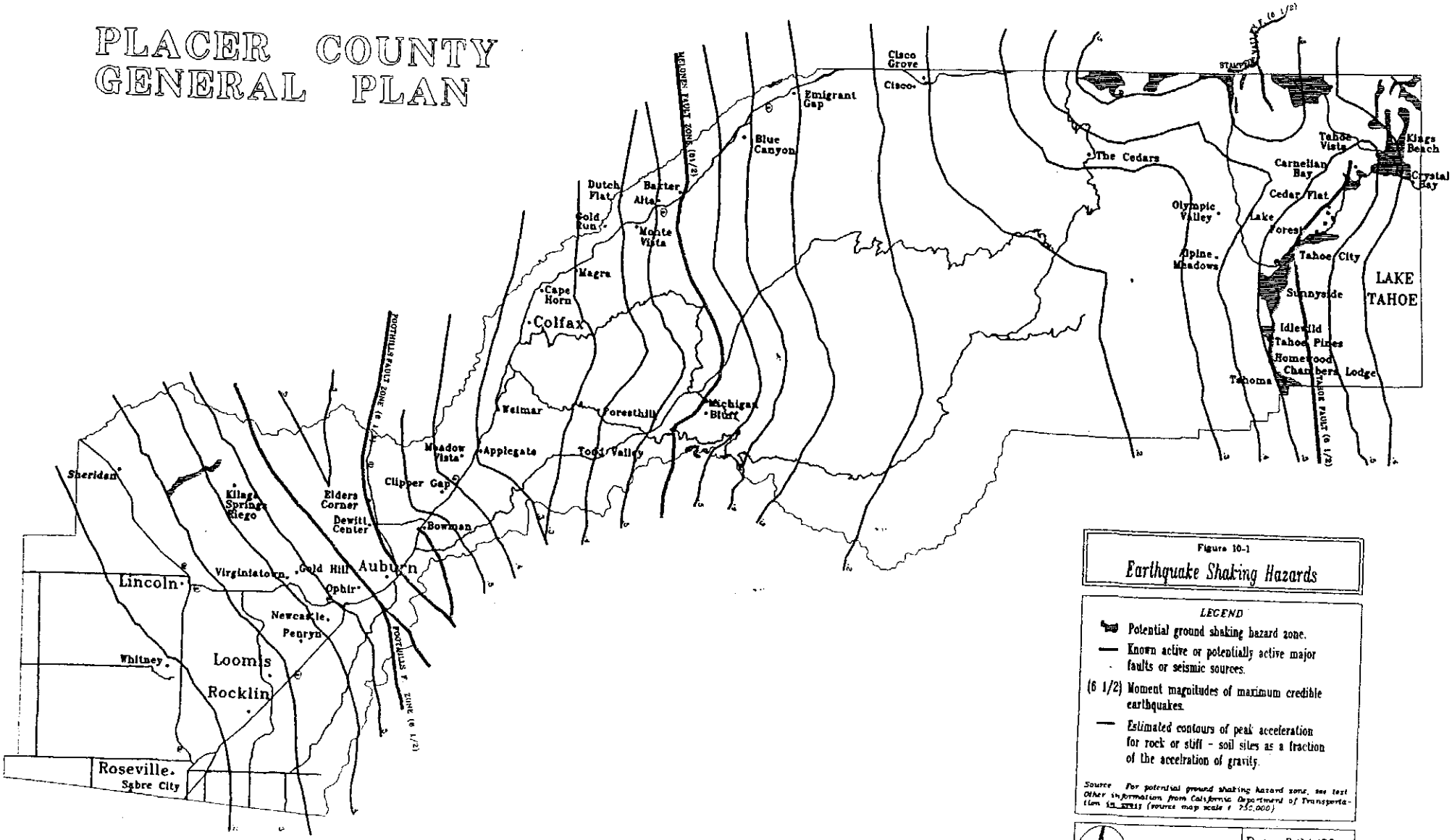


Figure 10-1

Earthquake Shaking Hazards

LEGEND

- Potential ground shaking hazard zone.
- Known active or potentially active major faults or seismic sources.
- (6 1/2) Moment magnitudes of maximum credible earthquakes.
- Estimated contours of peak acceleration for rock or stiff - soil sites as a fraction of the acceleration of gravity.

Source: For potential ground shaking hazard zone, see text. Other information from California Department of Transportation (Caltrans) (source map scale 1" = 250,000')

Scale 1" = 30,000'

Date: 8/14/92

Prepared by:
Jones & Stokes Assoc.

shaking intensities estimated for portions of Placer County may approach intensities expected for some of the coastal areas of California, but the probabilities of such events are occurring probably lower than for those events occurring on the more active San Andreas and related fault systems. As far as can be presently be determined, however, such major events could occur at any time.

Recent research on the shaking response of geologic units to seismic waves is also now available (Evernden and Thomson 1985; Tinsley and Fumal 1985). The body of work indicates ground shaking is magnified greatly in alluvial units compared to hard rock units, moderately in saturated alluvial units compared to those with a deep water table, and somewhat in fine-grained alluvial units compared to those having medium to coarse textures.

Application to Placer County

This recent work has been applied to conditions in Placer County for purposes of this report to estimate maximum credible ground-shaking intensities in the Modified Mercalli scale throughout Placer County.

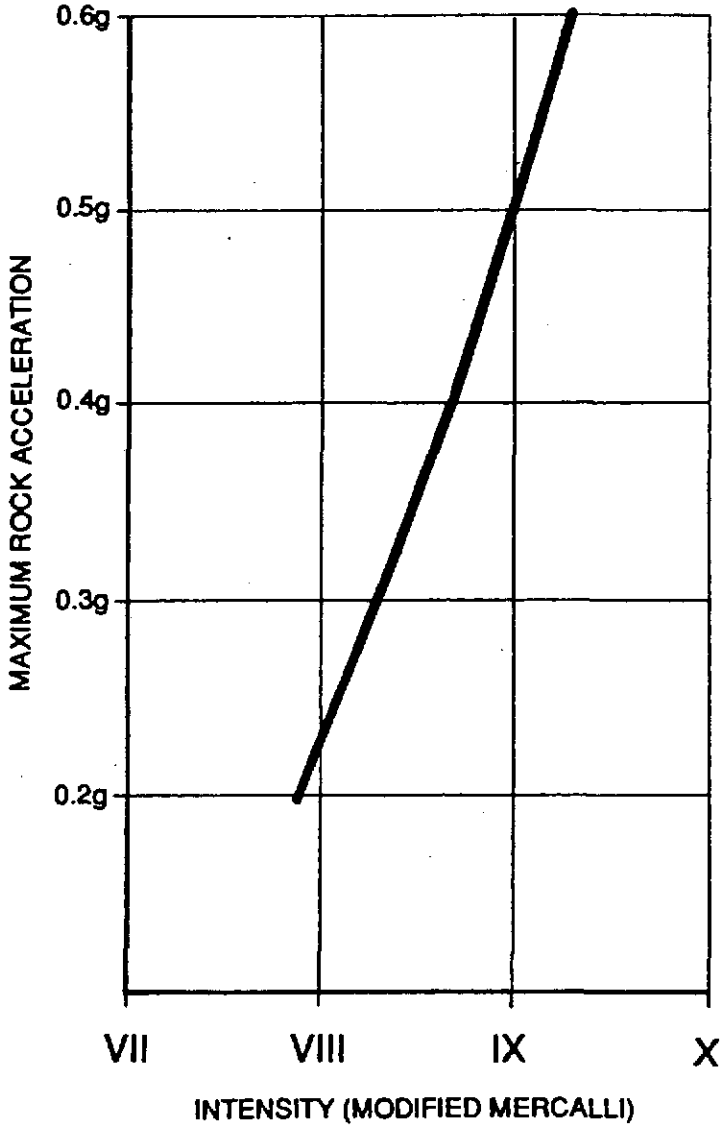
Mualchin and Jones' work (in press) reveals that the known potential for significant ground shaking in Placer County is associated only with faulting within the county itself or in nearby areas of Nevada County. Major earthquakes on the following more distant faults would not cause significant ground shaking in Placer County: the San Andreas, Hayward, and Calaveras faults in coastal California; faults along the east side of the coastal ranges; or the Genoa fault to the east in Nevada. By contrast, the four known or suspected faults within the county are all thought to be capable of producing earthquakes of magnitudes up to 6.5 on the Richter scale, which would cause severe ground shaking within a few miles of the source of the earthquake.

To estimate potential ground-shaking intensities, peak accelerations estimated by Mualchin and Jones (in press) throughout the county for maximum credible earthquakes on the four major faults or faults zones considered active or potentially active in or near Placer County (Figure 10-1) first were translated to maximum intensities on the Modified Mercalli scale (Figure 10-2). Geologic units (substrates) appearing on the two CDMG geologic atlas sheets covering the county then were classified in ground-condition unit classes (Table 10-1). Relative ground-shaking intensities for these classes were developed (Table 10-2), to account for geologic unit and groundwater conditions.

Results

The results from combining this information (Table 10-3) allow the user to estimate maximum credible intensity anywhere within the county by examining peak acceleration (from Figure 10-1), geologic unit (from the CDMG geologic atlas), and depth to groundwater (from well logs or field observations). The implications of the derived intensities are found in the Modified Mercalli Intensity Scale (Table 10-4).

Areas subject to intensity VIII would experience considerable damage to ordinary substantial buildings and great damage to poorly built structures. Damage to modern buildings specially designed to withstand earthquakes, however, would be slight (Table 10-4). Areas subject to intensity IX (8.5-9.5 on Table 10-3), however, would experience considerable damage to buildings specially designed to withstand earthquakes. As shown with bold print on Table 10-3, some areas of Placer County having alluvial substrates with relatively shallow groundwater (less than 30-foot depth) in the vicinity of the identified faults are subject to this level of damage if maximum credible earthquakes occur. These areas are primarily in the vicinity of the Stampede Valley and Tahoe faults in the Truckee-Tahoe area and are



Note: Maximum intensity shown applies to deep alluvial deposits where groundwater is less than 30' from the surface; see adjustments in Table 10-2 for other sites.

Figure 10-2. Relationship of Maximum Rock Acceleration to Maximum Intensity

Sources: Evernden and Thomson 1985; Hays 1980; Krinitzsky and Chung 1975; Trifunac and Brady 1975; Gutenberg and Richter 1956

shown on Figure 10-1 as "potential ground-shaking hazard areas". They are areas that would be subject to intensity IX ground shaking where the water table is shallower than 30 feet.

Critical facilities and schools should not be located in these areas if such groundwater conditions are encountered and site-specific evidence confirms the presence and character of the expected alluvial unit.

TABLE 10-1

GROUND-CONDITION UNITS FOR PLACER COUNTY SUBSTRATES

	Substrate[a]	Ground Condition Unit[b]
Sacramento quadrangle[c]	Q	J
	Qa	K
	Qb	J
	Qr	K
	Qmr	L
	Qtl	K
	Tm	F
	Mzd	A
	Jch	A
	mv	A
	um	A
	gb	A
	ms	B
	Pzcv	A
	Pzcc	B
Chico quadrangle[d]	QP	G
	Ec	D
	gr	A
	JRv	A
	ub	A
	Ju	C
	PP	B
	Mvp	H
	Pvp	H
	Qg	L
	JRv	A
	Jml	C
	Qpvb	I
	Qal	J
	Qt	K
	Qc	K
	Ql	J
	Qsc	K

[a] Geologic unit.

[b] A system created by Evernden and Thomson (1985), modified by Jones & Stokes Associates based on a generalization from Tinsley and Fumal (1985) to relate geologic units in California to the relative amplitude of earthquake waves passing through them. Used with Table 10-2, the system estimates maximum credible intensities shown in Table 10-3. Where J, K, or L appears, J1, K1, or L1 applies for water tables shallower than 30 feet; J2, K2, or L2 applies for water tables 30-100 feet deep, and J3, K3, or L3 applies for deeper water tables.

[c] California Department of Conservation, Division of Mines and Geology 1981.

[d] California Department of Conservation, Division of Mines and Geology 1962.

TABLE 10-2

RELATIVE EXPECTED INTENSITY FOR GROUND-CONDITION UNITS

Ground-Condition Unit[a]	Relative Modified Mercalli Intensity Compared to Fine- and Medium-Grained Holocene Alluvium with Shallow Water Table
A	-3.00
B	-2.60
C	-2.20
D	-1.80
E	-1.70
F	-1.50
G	-1.00
H	-2.70
I	-2.70
J1	0.00
J2	-1.00
J3	-1.50
K1	-0.35
K2	-1.35
K3	-1.85
L1	-0.70
L2	-1.70
L3	-2.20

[a] For a given substrate, see Table 10-1. Note that for alluvial units (J, K, L):

1 = water table shallower than 30 feet,
2 = water table 30-100 feet deep, and
3 = deeper water table.

Source: Evernden and Thomson 1985, modified by Jones & Stokes Associates based on generalization from Tinsley and Fumal 1985.

TABLE 10-3

MAXIMUM CREDIBLE INTENSITIES FOR PLACER COUNTY EARTHQUAKES

Substrate[a]	Ground-Condition Unit[b]	Peak Acceleration as a Fraction of Gravity[c] <0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5-0.6
Alluvial Deposits						
Fine- and medium-grained Holocene						
Water table <30 feet	J1	<7.9	8.1	**8.5**	**8.9**	**9.2**
Water table 30-100 feet	J2	<6.9	7.1	7.5	7.9	8.2
Water table >100 feet	J3	<6.4	6.6	7.0	7.4	7.7
Coarse-grained Holocene and fine- and medium-grained Pleistocene						
Water table <30 feet	K1	<7.6	7.8	8.2	**8.5**	**8.8**
Water table 30-100 feet	K2	<6.6	6.8	7.2	7.5	7.8
Water table >100 feet	K3	<6.1	6.3	6.7	7.0	7.3
Coarse-grained Pleistocene						
Water table <30 feet	L1	<7.2	7.4	7.8	8.2	**8.5**
Water table 30-100 feet	L2	<6.2	6.4	6.8	7.2	7.5
Water table >100 feet	L3	<5.7	5.9	6.3	6.7	7.0
Sedimentary Rocks						
Young (Pliocene-Pleistocene)	G	<6.9	7.1	7.5	7.9	8.2
Moderate (Mehrton fm.)	F	<6.4	6.6	7.0	7.4	7.7
Older	D,E	<6.2	6.4	6.8	7.1	7.4
Metasedimentary Rock						
Younger (Mesozoic)	C	<5.7	5.9	6.3	6.7	7.0
Older (Paleozoic)	B	<5.3	5.5	5.9	6.3	6.6
Volcanic Rocks						
(Cenozoic era)	H,I	<5.2	5.4	5.8	6.2	6.5
Other Crystalline Rocks						
Granitic, Metavolcanic, and Basic Intrusive (Serpenitic)	A	<4.9	5.1	5.5	5.9	6.2

Notes: Intensities are given in the Modified Mercalli Scale. The arabic numbers used in this table correspond to the Roman numerals used in the Modified Mercalli Scale, which is defined in Table 10-4. (Decimal figures indicate intermediate values between whole intensity numerals.) Bold intensities equal or exceed 8.5, the intensity above which losses of modern woodframe buildings would be expected to exceed 2.2% (Evernden and Thomson 1985) and damage to structures specially designed to withstand earthquakes is "considerable" (Table 10-4).

[a] Alluvium or rock type can be determined from geologic maps (e.g., Sacramento and Chico sheets published by the California Department of Conservation, Division of Mines and Geology). Groundwater depth class must be inferred from local wells or indications of shallow groundwater (e.g., springs, riparian vegetation.).

[b] See Table 10-1.

[c] See Figure 10-1.

TABLE 10-4

MODIFIED MERCALLI INTENSITY SCALE (ABRIDGED)

I	Not felt except by a very few under especially favorable circumstances.
II	Felt by only a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations like passing of truck. Duration estimated.
IV	During the day, felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, and doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows, and so on broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all; many are frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motorcars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Chimneys, factory stacks, columns, monuments, and walls fall. Heavy furniture overturned. Disturbs persons driving motorcars.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed, along with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

Source: U.S. Geological Survey 1985.

LIQUEFACTION HAZARDS

Liquefaction is the transformation of uncemented, saturated clay-free sand or silt to a liquified state resulting from increased pore-water pressures because of elastic waves (shaking) during an earthquake. Liquefaction opportunity is a function of the potential level of ground shaking at a given site, which was addressed in the preceding section. Liquefaction potential depends on the geologic material at the given site.

The percentage of total damage attributable to liquefaction during the three large earthquakes in California noted earlier ranged from 0 to approximately 20%. Although the potential for damage from liquefaction does not match that from ground shaking, it is considerably higher than the potential damage from surface rupture.

Opportunity

The zone of liquefaction opportunity for magnitude 6.5 earthquakes is approximately 30 miles (Wilson and Keefer 1985). As noted earlier, the maximum credible magnitudes for all four Placer County faults is 6.5. Map evaluation shows that all parts of Placer County are within 30 miles of at least one of the faults. Thus, all of Placer County has an opportunity for liquefaction damage.

Potential

Sites in Placer County having liquefaction potential are those on alluvial deposits having groundwater and sand or silt layers of uniform grain size within about 30 feet of the surface. These conditions could be found within portions of unconsolidated floodplain and lakebed deposits, but probably not within glacial till. In Placer County, alluvial geologic units Q, Qa, Qb, Qr, and Qmr on the Sacramento quadrangle and units Qal, Qt, Qc, and Ql on the Chico quadrangle should be considered potential liquefaction areas where groundwater is less than 30 feet deep.

Applicability

Geologic and soil maps do not provide sufficient information to map substrates having liquefaction potential. Only borings about 30 feet deep can reveal the requisite conditions in the candidate alluvial substrates. New, light structures are generally designed with foundation systems that can withstand some liquefaction without major loss, but investigative borings in candidate alluvial deposits should be taken where construction is proposed for buildings of three or more stories, or smaller structures having heavy loads.

SLOPE INSTABILITY

A landslide is defined as the downslope movement of soil and rock material under the influence of gravity (California Division of Mines and Geology 1984). The formation of landslides under natural conditions depends on several factors including:

- the type of materials (unconsolidated, soft sediments or surficial deposits will move downslope more easily than consolidated, hard bedrock),
- structural properties of the materials (the orientation of the rock-layering unit or sediments relative to slope directions),
- steepness of slopes (landslides occur more readily on steep slopes),
- water (landslides are generally more frequent in areas of seasonally high rainfall),
- vegetation type (trees with penetrating roots increase ground stability),

- proximity to areas undergoing active erosion (rapid undercutting makes nearby slopes more susceptible to landslides), and

- earthquake-generated ground shaking (strong ground shaking can trigger immediate ground failure or loosen materials and lead to future failure).

The zone of landslide opportunity for magnitude 6.5 earthquakes is approximately 75 miles (Wilson and Keefer 1985), indicating that failure of all unstable slopes in Placer County could be triggered during major earthquakes.

Although most natural slopes in Placer County are considered stable, landslides and slope failure have occurred in the past. Some landslides considered currently active and potentially active landslide areas are described below (Livingston 1976). The information and location of landslide areas have been prepared to aid general land use planning and should not be used on a site-specific basis.

Active Landslides

Table 10-5 lists the rock unit and location of active landslide deposits found in Placer County. Figure 10-3 shows approximately where these deposits are located, but because of the relatively small size of the deposits, they are not individually mapped.

TABLE 10-5

ACTIVE LANDSLIDE AREAS IN PLACER COUNTY

Rock Unit	Location
Valley Springs Tuff	Alta and Interstate-80
Metavolcanic Flows	Canyons of the North Fork of the American River

Source: Livingston 1976.

Inactive Landslides

Several inactive landslide deposits have been identified in Placer County, mostly in metavolcanic flow rock units along the canyon slopes of the North and Middle Forks of the American River, and along the Truckee River. Although these landslide areas are no longer active, they could be reactivated by either natural erosion or human activities.

Potentially Unstable Rock Units in Placer County

Table 10-6 lists the rock units in Placer County that have active or inactive deposits. Of all the rock units in Placer County, these are the most likely to have landslides under the right conditions, based on the several factors that could cause landsliding described above.

TABLE 10-6

POTENTIALLY UNSTABLE ROCK UNITS IN PLACER COUNTY

Rock Unit	Landslide Deposits
Valley Springs Tuff	Active
Metavolcanic Flows	Active
Mehrtren Mudflow Breccia (weathered)	Inactive
Serpentine	Inactive
Metasedimentary Rocks	Inactive

Source: Livingston 1976.

EXPANSIVE SOILS

Soils with a high clay content are usually expansive. Minerals in certain clays swell with increased moisture content and contract during dry periods. These volumetric changes with seasonal variations in moisture content can disrupt shallow foundations and pavement. On slopes, the continuous shrinking and swelling of expansive soils cause the soil to migrate downslope, which can also disrupt foundations and bury utility lines.

Expansive soils, or soils considered to have moderate to high shrink-swell potential, are limited to the low-lying areas, which are concentrated in western Placer County, from the City of Rocklin to the county line (Figure 10-3). The specific soil units with moderate to high shrink-swell potential are listed and briefly described in Table 10-7.

TABLE 10-7

SOILS IN PLACER COUNTY WITH MODERATE TO HIGH SHRINK-SWELL POTENTIAL

Soil	Description
San Joaquin-Cometa	Undulating, moderately deep and deep, well-drained soils that have a dense clay subsoil; located on terraces
Fiddyment-Cometa-Kaseberg	Undulating to rolling, deep to shallow, well-drained soils that are underlain by siltstone; located on terraces
Cometa-Ramona	Undulating, deep and very deep, well-drained soils; located on terraces
Xerofluvents-Kilaga-Ramona	Nearly level, very deep, well-drained to somewhat poorly drained soils; located on alluvial bottoms
Redding-Corning	Undulating to rolling, moderately deep and very deep, well-drained soils that have a dense clay subsoil; located on high terraces

Source: U.S. Soil Conservation Service 1979.

EROSION

The hazard of soil erosion can lead to other hazards including slope instability and sedimentation of nearby streams and rivers. Most soils in central and eastern Placer County are subject to high erosion potential and some soils have moderate to very high erosion potential. These soils are included in the following Tables 10-8 and 10-9 and are shown in Figure 10-3. Table 10-8 describes the soils that have moderate to high erosion hazard; Table 10-9 describes soils with moderate to very high erosion hazard.

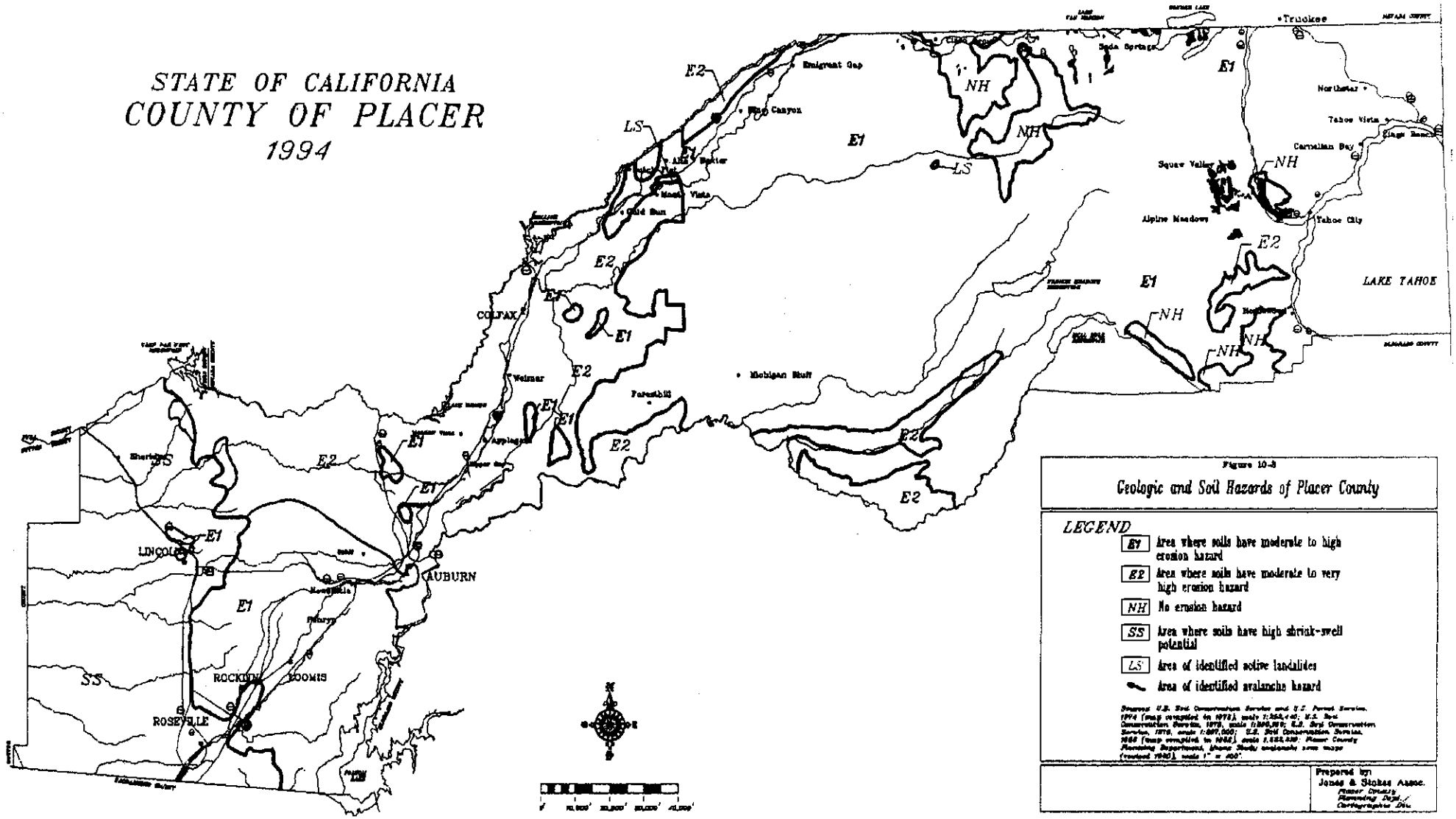

STATE OF CALIFORNIA
COUNTY OF PLACER
1994
Truckee
Donner Lake
Donner Summit
Soda Springs
Emigrant Gap
Blue Canyon
Alta
Baxter
Dutch Flat
Gold Run
Weimar
Colfax
Applegate
Forest Hill
Michigan Bluff
Sheridan
Lincoln
Auburn
Newcastle
Penryn
Rocklin
Loomis
Roseville
Northstar
Tahoe Vista
Kings Beach
Carnelian Bay
Squaw Valley
Alpine Meadows
Tahoe City
LAKE TAHOE
E1
E2
NH
LS
SS
Figure 10-8
Geologic and Soil Hazards of Placer County
LEGEND
E1 Area where soils have moderate to high erosion hazard
E2 Area where soils have moderate to very high erosion hazard
NH No erosion hazard
SS Area where soils have high shrink-swell potential
LS Area of identified active landslides
Area of identified avalanche hazard
Prepared by:
Jones & Stokes Assoc.
Placer County
Planning Dept.
Cartographic Div.

TABLE 10-8

SOILS IN PLACER COUNTY WITH MODERATE TO HIGH EROSION HAZARD

Soil	Description
Exchequer-Inks	Undulating to steep, well-drained and somewhat excessively drained soils that are shallow over volcanic rock
Andregg-Caperton-Sierra	Undulating to steep, well-drained and somewhat excessively drained soils that are deep to shallow over granitic rock
Cohasset-Aiken-McCarthy	Undulating to steep, well-drained soils that are moderately deep to very deep over volcanic rock
Dubakella-Rock outcrop	Rolling to steep, well-drained soils that are moderately deep over serpentine; also located on rock outcrop
Meeks-Tallac	Nearly level to steep, moderately well-drained to somewhat excessively drained soils that are deep to very deep over a pan
Tahoma-Jorge	Gently sloping to steep, well-drained soils that are deep to very deep over latite and andesitic conglomerate
Umpa-Fugawee	Gently sloping to steep, well-drained soils that are moderately deep over andesite and andesitic conglomerate
Waca-Meiss	Strongly sloping to steep, well-drained and excessively drained soils that are moderately deep to shallow over andesite or andesitic tuff
Hurlbut-Deadwood-Putt	Moderately deep and shallow, nearly level to very steep, well-drained soils on mountainsides
McCarthy-Crozier-Ledmount	Moderately deep, nearly level to very steep, well-drained soils on ridgetops and mountainsides
Tallac-Smokey-Meiss	Deep and moderately deep and shallow, nearly level to very steep, moderately well-drained to somewhat excessively drained soils on moraines, outwash terraces, and mountainsides
Fugawee-Waca-Ahart	Moderately deep, nearly level to very steep, well-drained soils on mountainsides
Trojan-Kyburz-Portola	Deep and moderately deep, level to very steep, well-drained soils on mountainsides

Sources: U.S. Soil Conservation Service 1974, 1976, 1979; U.S. Forest Service and U.S. Soil Conservation Service 1986.

TABLE 10-9

SOILS IN PLACER COUNTY WITH MODERATE TO VERY HIGH EROSION HAZARD

Soil	Description
Auburn-Sobrante	Undulating to very steep, well-drained soils that are shallow or moderately deep over metamorphic rock
Mariposa-Josephine-Sites	Undulating to steep, well-drained soils that are shallow to deep over metamorphic rock
Maymen-Mariposa	Hilly to very steep, well-drained and somewhat excessively drained soils that are shallow or moderately deep over metamorphic rock
Cohasset-Jocal-Holland	Very deep, nearly level to very steep, well-drained soils on ridgetops and mountainsides.

Sources: U.S. Soil Conservation Service 1976, 1979; U.S. Forest Service and U.S. Soil Conservation Service 1986.

AVALANCHE HAZARDS

The combination of steep slopes, abundant snow, weather, snowpack, and an impetus to cause movement create an avalanching episode. Avalanche hazards exist in eastern Placer County, where combinations of the above criteria can occur.

Areas where the potential for avalanche exists are zoned as moderate or high avalanche hazard zones and have been identified using maps (1 inch=400 feet) available at the Placer County Planning Department (Figure 10-3). Moderate hazard zones are usually on shallow slopes and located immediately downhill of high zones. These zones are located near the Nevada County line, south of Donner Lake and Lake Van Norden, east of Tahoe City, near Twin Peaks and McKinney Bay, and in areas near Squaw Valley, Alpine Meadows, and Sugar Bowl.

Placer County's avalanche management program defines Potential Avalanche Hazard Areas (PAHAs) as those areas where the minimum probability of avalanche occurrence is greater than 1 in 100 per year or where avalanche damage has already occurred. The Placer County Department of Public Works and property owners that rent their property to the public are required to post information in facilities located in PAHAs explaining avalanche hazards and available emergency services. According to the Placer County Avalanche Management Ordinance (Ordinance No. 4331-B), information must include:

- identification that a structure is within a PAHA;
- a warning that avalanche control work, including the use of explosives, may be carried out and that avalanche control personnel may provide special advisories or instructions;

- a warning that authorities may attempt to contact property owners during periods of severe storm events, but that it is the responsibility of the occupants to use good judgement during such events; and

- identification of local radio stations that provide weather information, phone numbers of the Office of Emergency Services and other local emergency offices, and available brochures about avalanches.

The county will not issue a building permit for construction in a PAHA without certifying that the structure will be safe under the anticipated snow loads and conditions of an avalanche. In general, structures must be constructed of reinforced concrete or other reinforced masonry at least as high as the depth of an expected avalanche because constructing wood-frame structures that will withstand forces greater than 1 ton per square meter is considered economically infeasible.

STRUCTURAL HAZARD AREAS AND CRITICAL FACILITIES

Structural Hazards

If a moderate to large earthquake occurs, historic and modern buildings that are not reinforced to current codes are considered structural hazards. Because of the long history of buildings in Placer County, structural hazards exist in almost every town.

Brick was the favored material for construction from the late 1800s and to early 1900s. Brick buildings often were constructed on rock or concrete foundations. These conditions make older buildings susceptible to earthquake damage. Because of geotechnical effects on unreinforced buildings, walls might crumble or entire buildings might slide off their foundations as a result of construction associated with older buildings. Concrete tilt-up buildings or wood-frame buildings throughout the county should also be of concern. (Durfee pers. comm.)

Buildings in Auburn, Bowman, Colfax, Dewitt Center, Gold Run, Lincoln, Loomis, Penryn, and Roseville have potential structural hazards; however, a complete inventory of these buildings is unavailable. Although the Uniform Building Code requires inventories in areas designated as Seismic Zone 4, Placer County is rated a Seismic Zone 3 and therefore requires no such inventory. (Jenkins pers. comm.)

Dewitt Center is the largest single area in the county with buildings that could be considered structural hazards. The 85 buildings in Dewitt Center were originally constructed for and used by the U.S. Army between 1942 and 1946, then served as a county mental health facility from 1947 to 1972. Since then, the center has housed the government offices for Placer County. These unreinforced masonry buildings were constructed before seismic safety requirements and the footings do not have steel bracing. (Durfee pers. comm.)

The city agencies of Auburn, Loomis, Rocklin and Roseville are responsible for ensuring the safety of structures within their city limits. Many of the historic buildings in these cities serve business and commercial uses. Historic Auburn probably has the largest number of unreinforced buildings (50-100).

Although seismic reinforcement is not widespread, the two largest remodelings in the past 6 years are one building at the Dewitt Center and the historic Lincoln courthouse. Extra footings were poured for one small classroom in Dewitt Center, and a floating steel structure was added in renovating and

remodeling of the historic Lincoln courthouse. (Durfee pers. comm.) The structural safety of the existing residences is one consideration of housing adequacy, which is addressed in the housing section of this document.

Critical Facilities

Critical facilities are those services and facilities necessary during a major emergency. Identifying these facilities can improve emergency response times during catastrophic fires, earthquakes, landslides, or other natural disasters.

The County has identified a number of critical emergency services and facilities listed in Table 10-10. These include four sheriff stations, six police stations, two hospitals, and more than 29 fire agencies, and offices for the California Highway Patrol, the California Department of Forestry and Fire Protection (CDF), the U.S. Forest Service (USFS), the National Guard, the Coast Guard, and the Office of Emergency Services. Two fairgrounds can provide emergency shelter, and four airports can provide emergency transportation.

The location of the services and facilities described above as well as transportation corridors and electric lines are included in Figure 10-4.

Facilities in Nevada, El Dorado, and Sacramento Counties are also considered critical to emergency response in Placer County. Many of these facilities are identified in Table 10-10 and Figure 10-4. Additional facilities include Tahoe Forest Hospital in Truckee, Barton Memorial Hospital in South Lake Tahoe, Sierra Nevada Memorial Hospital in Grass Valley, and Mercy Hospital of Folsom in Folsom as well as fire and law enforcement agencies in these surrounding areas.

10.3 WILDLAND AND URBAN FIRE HAZARD

Fire hazards in Placer County threaten lives, property, and natural resources. In 1986, 1987, and 1989, local and state firefighters in Placer County responded to an average of 1,130 incidents and fires each year that resulted in an average of $2.7 million in property loss (excluding homes), and $0.77 million in content loss (Widener pers. comm.). In 1988, property losses exceeded $4.3 million and content losses exceeded $2 million in Placer County.

RESPONSIBILITIES

Structural and wildland fire protection in Placer County is provided by 26 local fire districts, CDF, and USFS (Figure 10-5). The fire districts, which provide their own structural and wildland fire protection, are concentrated in the western portion of the county, along the Interstate 80 (I-80) corridor, and in the eastern portion of the county, around Lake Tahoe.

Placer County contracts with CDF to provide structural and wildland fire protection to State Responsibility Areas (SRA) in western Placer County, along the I-80 corridor between Bowman and Emigrant Gap, and around Truckee (Figure 10-6).

Fire protection on federal lands is provided by the Tahoe National Forest (TNF). CDF and TNF have a cooperative agreement to provide fire protection on private lands within the national forest boundary.

PLACER COUNTY GENERAL PLAN

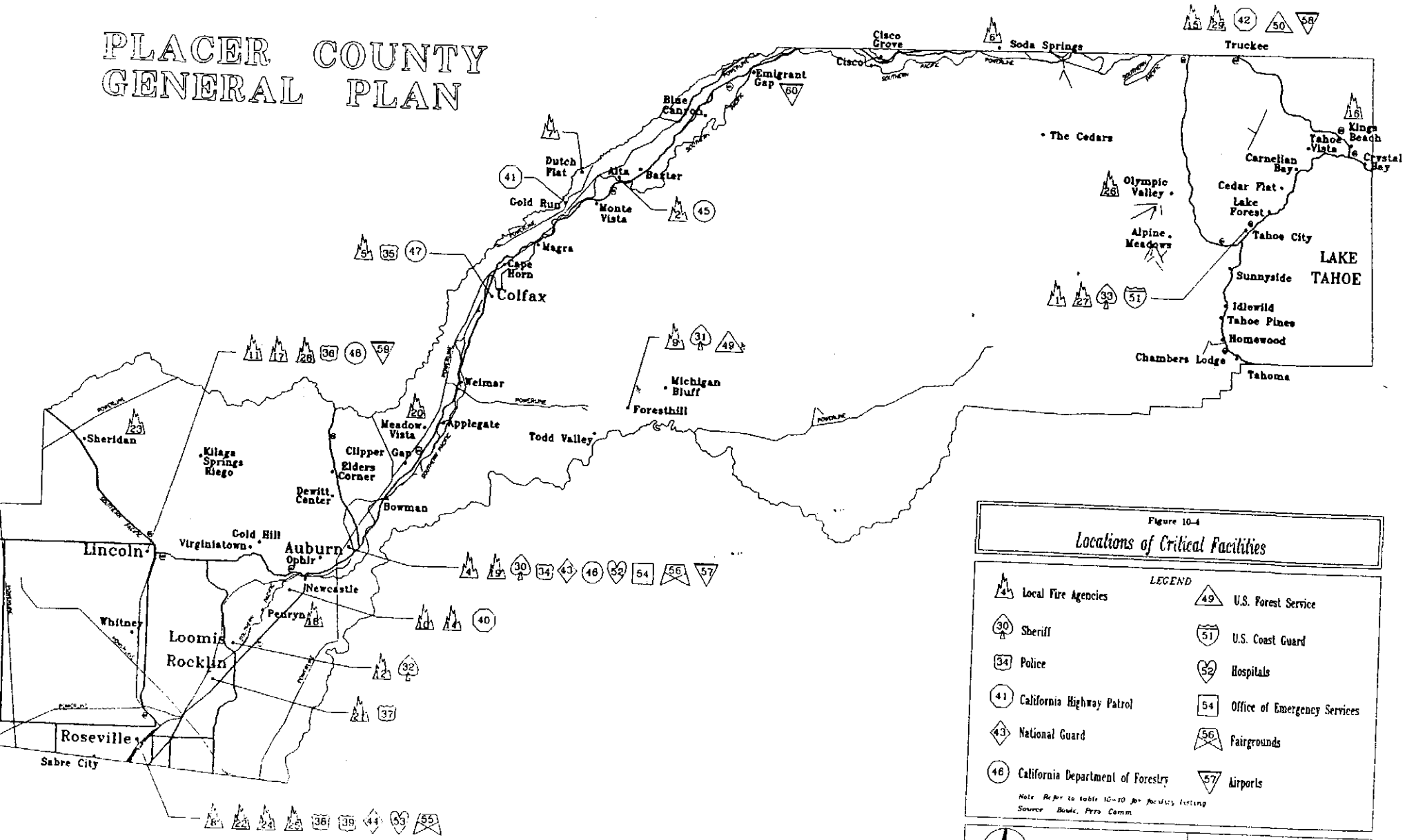


Figure 10-4

Locations of Critical Facilities

LEGEND

- Local Fire Agencies
- Sheriff
- Police
- California Highway Patrol
- National Guard
- California Department of Forestry
- U.S. Forest Service
- U.S. Coast Guard
- Hospitals
- Office of Emergency Services
- Fairgrounds
- Airports

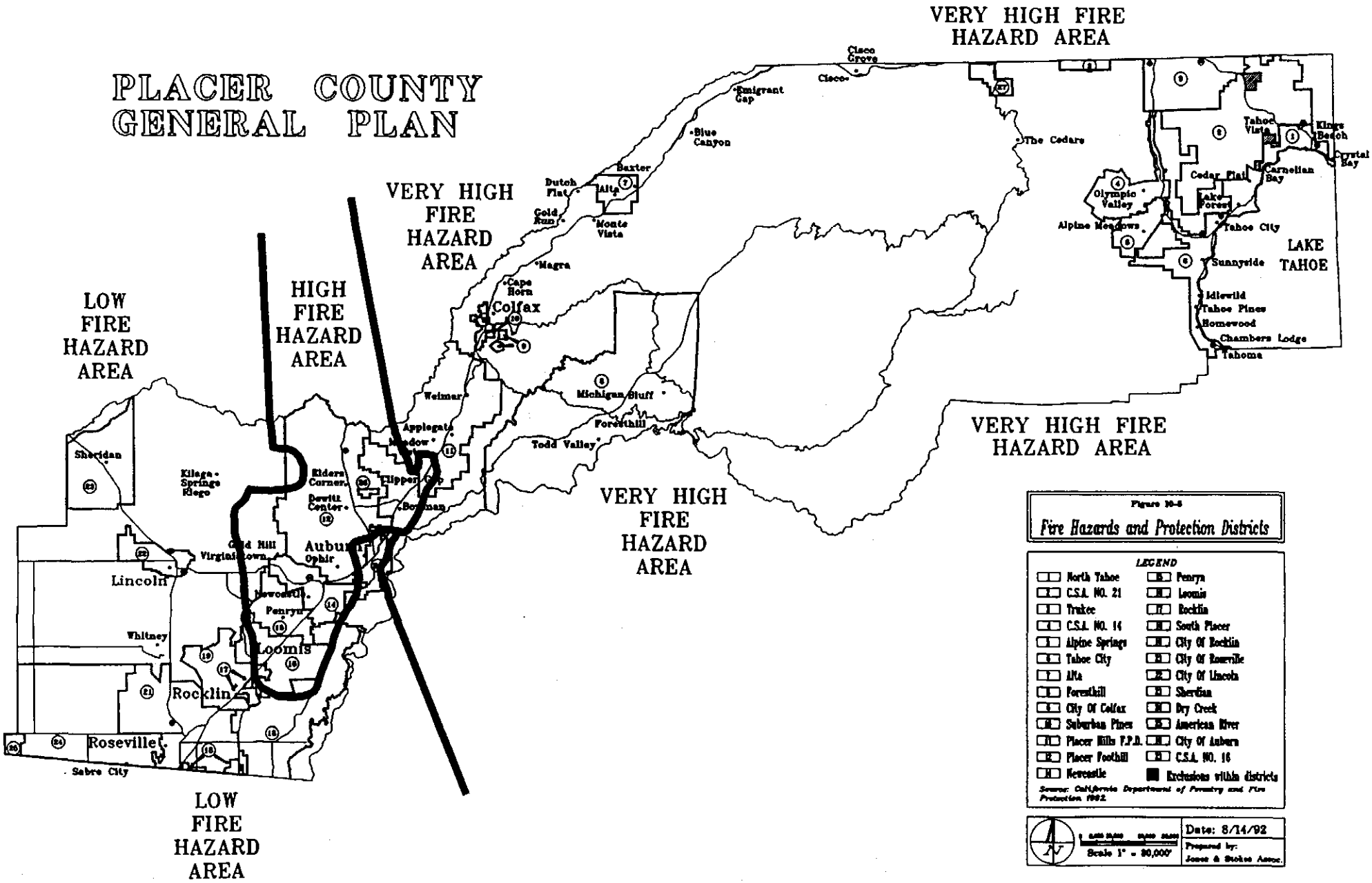
Note: Refer to table 10-10 for facility listing

Source: Boyle, Pers. Comm.

Scale 1" = 20,000'

Date: 8/14/92

Prepared by: Jones & Stokes Assoc.


PLACER COUNTY
GENERAL PLAN
VERY HIGH FIRE
HAZARD AREA
VERY HIGH
FIRE
HAZARD
AREA
HIGH
FIRE
HAZARD
AREA
LOW
FIRE
HAZARD
AREA
VERY HIGH
FIRE
HAZARD
AREA
VERY HIGH FIRE
HAZARD AREA
LOW
FIRE
HAZARD
AREA
LAKE
TAHOE
Cisco Grove
Cisco
Emigrant Gap
Blue Canyon
Baxter
Dutch Flat
Alta
Cold Run
Monte Vista
Magra
Cape Horn
Colfax
Weimar
Applegate
Meadow
Michigan Bluff
Foresthill
Todd Valley
Bowman
Elippo
Gap
Elders Corner
Dewitt Center
Auburn
Ophir
Gold Hill
Virginiatown
Newcastle
Penryn
Loomis
Whitney
Rocklin
Lincoln
Roseville
Sabra City
Sheridan
Kilaga Springs
Kilaga
The Cedars
Tahoe Vista
Kings Beach
Crystal Bay
Carnelian Bay
Cedar Flat
Olympic Valley
Lake Forest
Alpine Meadows
Tahoe City
Sunnyside
Idlewild
Tahoe Pines
Homewood
Chambers Lodge
Tahoma
Figure 10-5
Fire Hazards and Protection Districts
LEGEND
North Tahoe
C.S.A. NO. 21
Truckee
C.S.A. NO. 14
Alpine Springs
Tahoe City
Alta
Foresthill
City Of Colfax
Suburban Pines
Placer Hills F.P.D.
Placer Foothill
Newcastle
Penryn
Loomis
Rocklin
South Placer
City Of Rocklin
City Of Roseville
City Of Lincoln
Sheridan
Dry Creek
American River
City Of Auburn
C.S.A. NO. 16
Exclusions within districts
Source: California Department of Forestry and Fire Protection 1992
Scale 1" = 80,000'
Date: 8/14/92
Prepared by:
Jones & Stokes Assoc.

PLACER COUNTY GENERAL PLAN

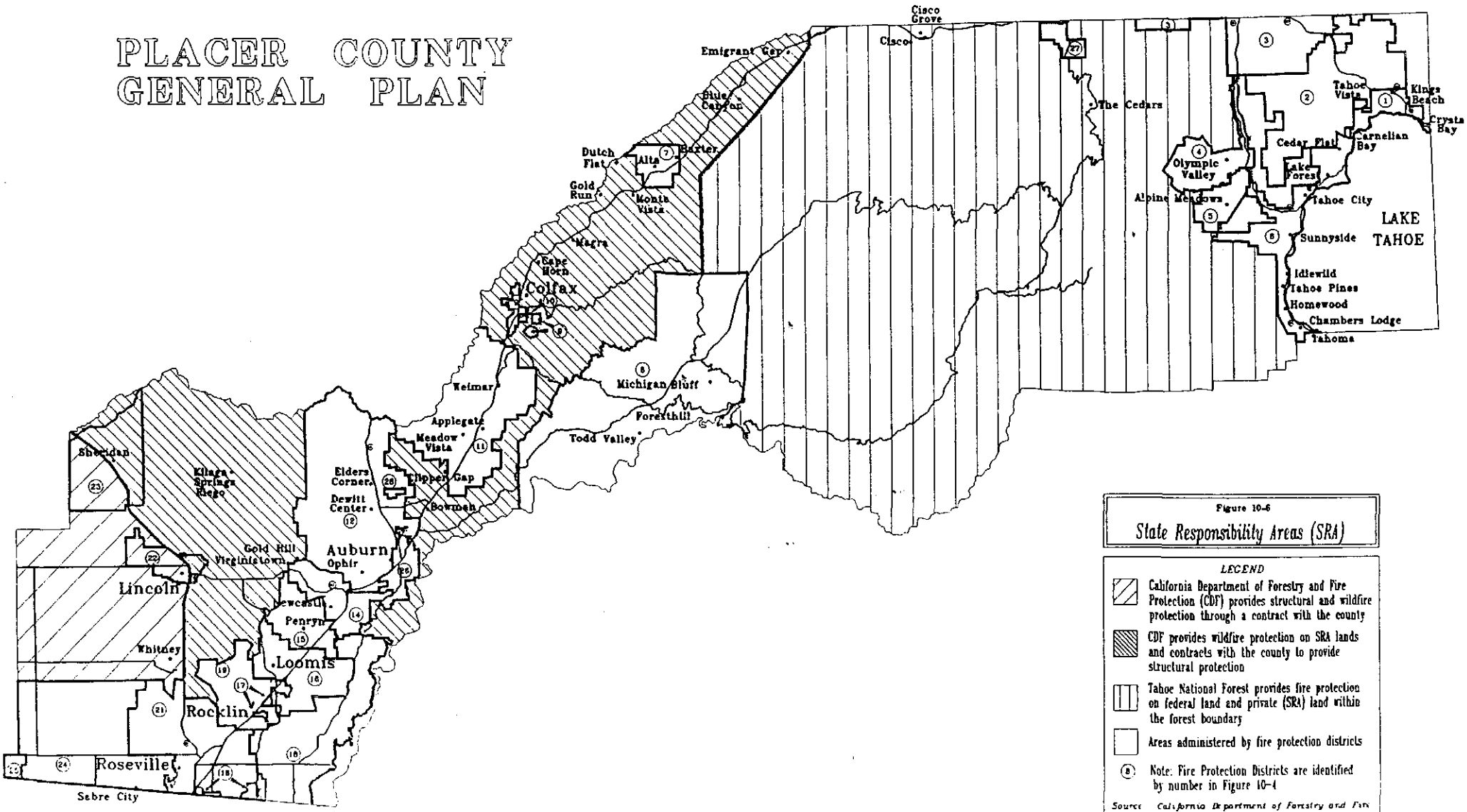


Figure 10-6

State Responsibility Areas (SRA)

LEGEND

- California Department of Forestry and Fire Protection (CDF) provides structural and wildfire protection through a contract with the county
- CDF provides wildfire protection on SRA lands and contracts with the county to provide structural protection
- Tahoe National Forest provides fire protection on federal land and private (SRA) land within the forest boundary
- Areas administered by fire protection districts
- (8) Note: Fire Protection Districts are identified by number in Figure 10-4

Source: California Department of Forestry and Fire Protection 1992

Scale 1" = 80,000'

Date: 8/14/92

Prepared by: Jones & Stokes Assoc.

FIRE HAZARDS

Fire hazards are identified by evaluating the type and amount of fuels, the topography, and climate. Hazards are greatest in areas with a ladder of rapidly ignitable fuels, such as grasses, that are adjacent to hotter and longer-burning fuels such as shrubs and trees. Steep slopes allow fires to preheat vegetation before climbing hillsides, which increases the rate of fire spread. Most fires start between May and October because the hot and dry weather conditions reduce plant moisture and make vegetation more susceptible to burning.

The state fire marshal has identified the following fire hazards in Placer County. Very high hazards have been identified east of Auburn and Meadow Vista (Figure 10-5). High hazards are present between Hidden Valley and the Nevada-Placer County line and from Virginiatown to just west of Auburn. Moderate fire hazards are present west of this in the remainder of the county.

FIRE RISKS

Fire risks are identified by evaluating the source of the ignition. Developed areas, areas of concentrated recreation users, or areas that are susceptible to high frequencies of lightning storms may be considered high risks. Between 1981 and 1990, 56 percent of all fires were started by equipment use and debris burning, and 15 percent were considered arson on SRA lands and wildlands within fire districts in the county (Hoffmeier pers. comm.) (Figure 10-7). At higher elevations in the TNF, approximately half of the wildfires are started by people and half are started by lightning (U.S. Forest Service 1990).

STRUCTURAL FIRE PROTECTION

The loss of structures because of fires is a constant threat, which continues to rise as the number of county residents and businesses increases. In 1991, CDF constructed a fire station in Truckee to provide additional protection to that rapidly growing area.

The lack of adequate water for fire fighting and delayed response times because of insufficient fire stations, inadequate signing, narrow roads, and dead end roads may increase fire losses. The 64 buildings in the Sunset Industrial area, off Highway 65, present one of the county's largest structural fire problems because no fire station is located within 5 miles.

Fire Construction Standards

The design and construction of structures, subdivisions, and developments varies between fire districts and SRA lands. Individual districts generally follow the construction standards in the Uniform Building Code or Uniform Fire Code, or impose their own, more stringent standards (Wydra pers. comm.).

SRA lands are covered under the Fire Safe Regulations (Public Resources Code 4290). Minimum standards of the fire safe program include the following:

- Emergency access shall be ensured by minimum 18-foot road widths (10 feet for one-way roads and driveways) with surface accommodating conventional vehicles and 40,000-pound loads, grades not exceeding 16 percent, curve radii of at least 50 feet, dead ends meeting maximum length requirements with turnouts and turnarounds, and roadway structures and gate entrances that do not obstruct clear passage of authorized vehicles.

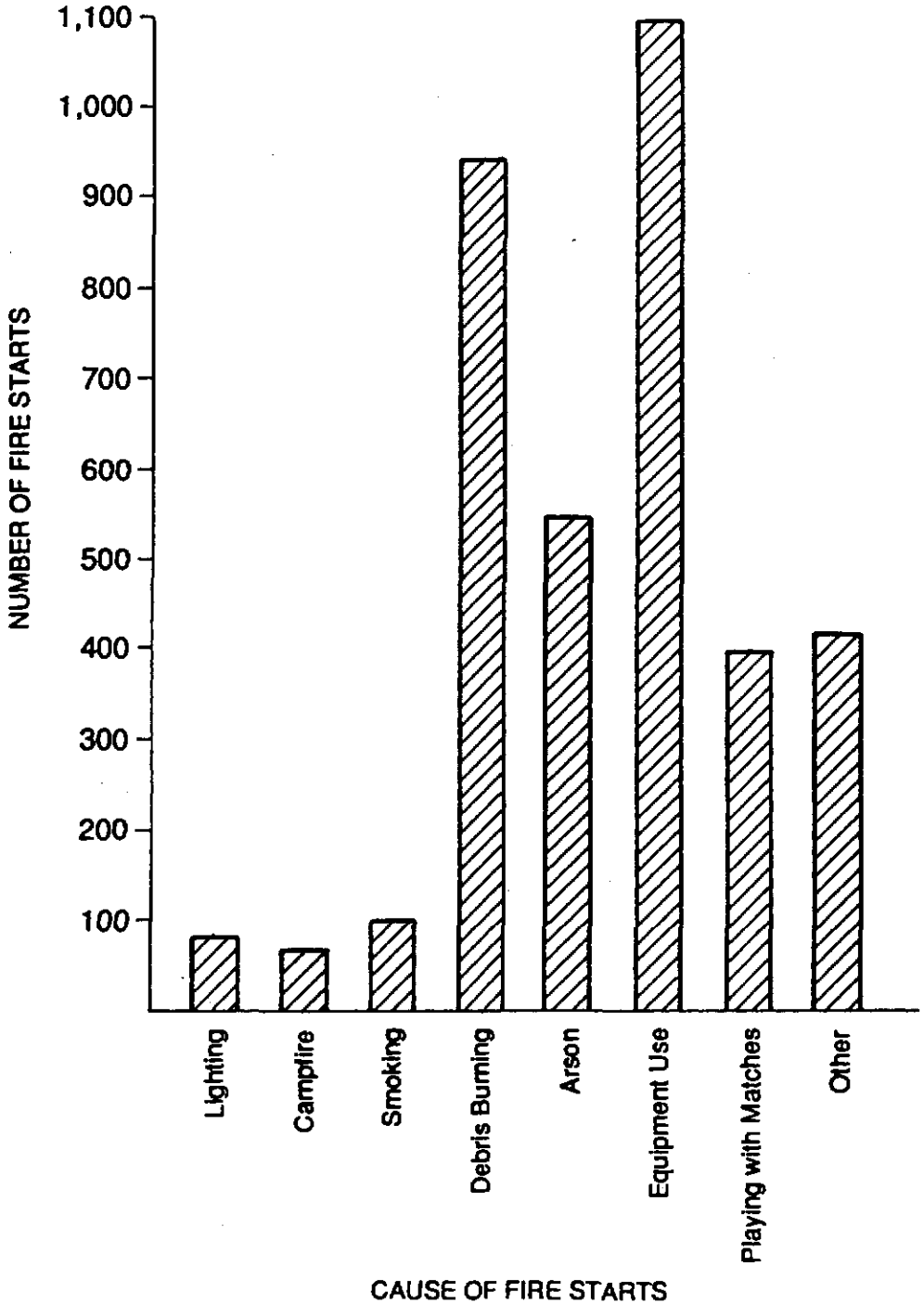


Figure 10-7. Number of Fire Starts in SRA Lands and Wildland Fires within Districts Covered by CDF in Placer County between 1981-1990

Source: Hoffmier, pers. comm. 1991

- Signing and building numbering shall facilitate locating a fire and avoiding delays in response time by being sufficiently visible, nonduplicative, and indicative of location and any traffic access limitations.

- Emergency water sources shall be available and accessible in adequate quantities to combat wildfire with labeled hydrants meeting uniform specifications.

- Fuel modification shall be practiced to reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation adjacent to structures and in the general vicinity of development.

WILDLAND FIRES

Wildland fires in Placer County can result in severe damage to valuable natural resources and important open spaces and recreation areas. Wildfires result in the loss of commercial timber, may increase erosion on steep slopes, and degrade water quality in reservoirs.

10.4 FLOODING HAZARDS

Flooding due to excessive rainfall can occur in Placer County anytime between November and May. This type of flood is usually a result of heavy, prolonged rainfall following seasonal ground saturation. Localized cloudburst storms may also occur anytime from early fall to late spring. A gradual or instantaneous failure of a dam structure could occur at any time because of internal erosion caused by embankment or foundation leakage, or inadequate spillway capacity and overtopping during or following a major rainfall.

100-YEAR FLOOD HAZARD

Flooding hazards have been statistically evaluated to establish the likely extent of a 100-year flood. This is a flood level that may be expected to occur once every 100 years or to have a 1 percent chance of occurring in any given year (see Glossary). The floodplain areas within unincorporated Placer County associated with the 100-year flood have been mapped by the Federal Emergency Management Agency (FEMA). Figure 9-1 identifies the approximate boundaries of the 100-year floodplain. More detailed FEMA maps should be used for evaluation of the flood hazard associated with specific properties. Most of these flood hazard areas are presently undeveloped; the only urbanized unincorporated area affected is Tahoe City on the Truckee River. The majority of the areas subject to flooding are found near the western boundary of the county on nearly flat terrain associated with tributaries to the Sacramento River.

DAM FAILURE INUNDATION HAZARD

Eleven dams in Placer County are at least 75 feet tall or have a capacity of 10,000 acre-feet of water. Thirty-three smaller dams are located throughout the county. Failure of any one of these dams would flood downstream areas and could cause loss of life and property.

Only four dams within Placer County are considered to have the potential to threaten more than 100 persons. The generalized dam failure inundation hazard area is shown for three of these facilities in Figure 9-1. The most significant inundation hazard is associated with Folsom Dikes 5 and 6.

- Folsom Lake Dikes 5 and 6 could threaten 25,352 people in an inundation area that extends generally along Linda Creek, Cirby Creek, and Dry Creek within the City of Roseville and into Sacramento County as far as Elverta and Rio Linda, and possibly could cause failure of the levees of the Natomas East Main Drainage Canal.

- Lake Tahoe Dam, located at the outlet of the lake on the Truckee River, could threaten 1,000 people but is expected to be contained generally within the Truckee River floodway to Nevada County and beyond (not shown in Figure 9-1).

- Camp Far West Dam could threaten 470 people along the Bear River southwest to Sheridan and could inundate State Highway 65, numerous local roads, and the Southern Pacific Railroad tracks.

- Lake Combie Dam, also on the Bear River, could threaten 200 people downstream to Camp Far West Reservoir and could inundate State Highway 49 (Placer County Office of Emergency Services 1990).

Flood Hazards

Other major reservoirs in Placer County have the potential to threaten 100 or fewer persons. The most significant inundation hazard of these reservoirs is associated with Lake Valley Dam.

- Lake Valley Dam could threaten up to 100 persons in an inundation area that would include the PG&E Lodgepole Campground and small developments along the North Fork of the American River. Failure of the dam could cause the North Fork Dam to spill an estimated 32,200 cubic feet per second.

- North Fork Dam would not threaten persons unless recreationists were in the vicinity at the time of dam failure.

- French Meadows Dam could threaten an estimated 20 persons and could inundate French Meadows Road and Highway 49 on the North Fork of the American River.

- Hell Hole Dam could threaten an estimated 20 persons and could inundate French Meadows Road bridge at the confluence of the Rubicon River and Middle Fork of the American River and inundate the Highway 49 bridge on the North Fork of the American River.

- Sugar Pine Dam would not threaten persons unless recreationists were in the vicinity at the time of dam failure. Iowa Hill Road, Shirttail Canyon Road, and Yankee Jim's Road could all be inundated. (Placer County Office of Emergency Services 1990.)

In addition, Rollins Reservoir Dam on the Bear River in Nevada County and Stumpy Meadows Dam on Pilot Hill Creek above the Rubicon River and the Middle Fork of the American River in El Dorado County could affect Placer County and could threaten 100-200 people.

Dam Failure Evacuation Plan

The Placer County Office of Emergency Services has developed an evacuation plan that specifies emergency procedures for evacuation, control, and re-entry of areas at risk for possible dam inundation (Placer County Office of Emergency Services 1990). This plan lists relevant information on all dams that

affect the county and provides maps of the hazard areas for dam failure inundation associated with each facility. These maps should be used to evaluate the dam inundation hazard associated with specific properties.

10.5 SOLID, LIQUID, AND HAZARDOUS WASTE HAZARDS

Solid, liquid, and hazardous wastes generated by county residents and businesses contribute to environmental and human health hazards that have become an increasing public concern in recent years. Toxicity and contamination of soils, water, air, and organisms present hazards of varying severity that can be controlled and minimized by proper waste management and disposal. State and federal laws regulating waste disposal practices are being increasingly implemented to ensure that environmental health hazards are effectively addressed. The following discussion presents the current management and regulatory background on solid and liquid waste, followed by a discussion of hazardous waste.

SOLID AND LIQUID WASTE

Solid and liquid waste includes all paper products, food, agricultural residues, yard wastes, plastics, glass, metal, wood, and other materials that are not sewage or hazardous materials (see "Solid Waste" in the Glossary). Most solid waste is generated by residential and commercial activities. Placer County currently deposits approximately 224,500 tons of solid waste per year in sanitary landfills (Siren 1989). A relatively small amount of infectious solid waste is incinerated yearly at Auburn Faith Hospital and Roseville Community Hospital.

Disposal and Transfer Sites and Surrounding Land Uses

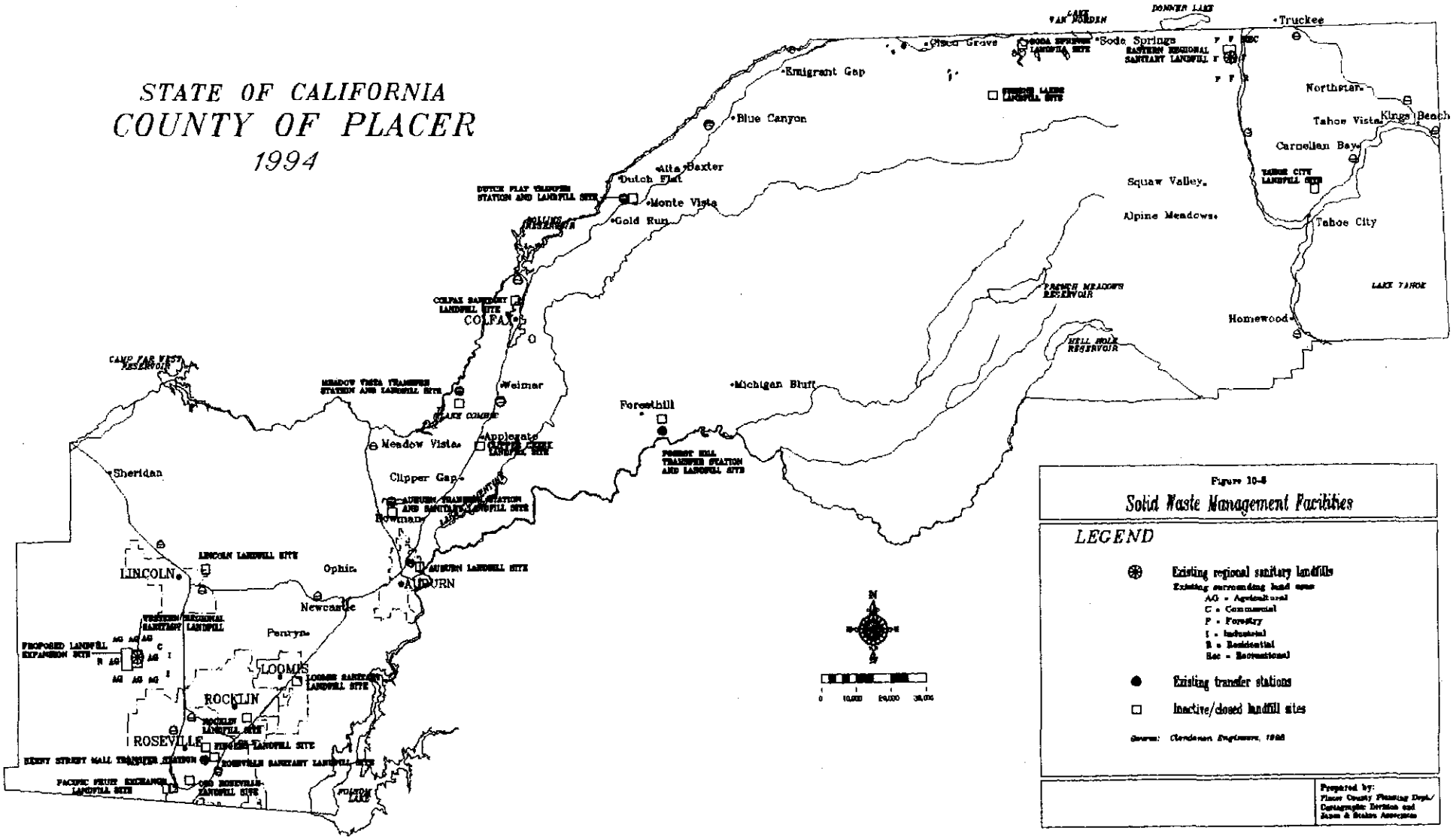
Two sanitary landfills operate in Placer County (Figure 10-8). The Western Regional Sanitary Landfill occupies approximately 320 acres of county land located off State Highway 65, about 1.5 miles northeast of the City of Roseville on Fiddyment Road. This landfill accepts about 520 tons of solid waste every day, and it will be filled to capacity by 2015. The county has applied for state and local permits to increase the rate of disposal at this landfill to 800 tons of solid waste per day (Martin pers. comm.). Existing land uses surrounding the Western Regional Sanitary Landfill are primarily agricultural. The Sunset Industrial Park is located about a mile east of the facility. (Siren 1989.)

The Eastern Regional Sanitary Landfill occupies 102 acres of U.S. Forest Service land west of State Highway 89, approximately 3 miles south of Truckee. The landfill receives approximately 95 tons of solid waste per day and will be filled to capacity by 2010. Surrounding land uses include timber production, sheep grazing, wildlife habitat, and outdoor recreation. Similar land uses are expected to resume at the landfill site when this facility closes. (Siren 1989.)

Seventeen other former landfills located throughout Placer County no longer receive wastes and are at various stages of closure (Figure 10-8). Monitoring activities at closed landfills will continue for several years. Of the 17 inactive sites, four are stabilized and returning to their natural state. (Siren 1989.)

Solid waste is temporarily collected at five transfer stations in Placer County for efficient transfer to the two regional landfills. These transfer stations are open for public solid waste disposal on a fee basis, except for the Dutch Flat location.

- Auburn Transfer Station. This 5-acre facility is located about 1 mile east of State Highway 49 on Shale Ridge Road in the north Auburn area. Existing city land uses to the east include the


STATE OF CALIFORNIA
COUNTY OF PLACER
1994
Truckee
Donner Lake
Lake Van Norden
Soda Springs
Cisco Grove
Emigrant Gap
Blue Canyon
Alta
Baxter
Dutch Flat
Monte Vista
Gold Run
Squaw Valley
Alpine Meadows
Northstar
Tahoe Vista
Kings Beach
Carnelian Bay
Tahoe City
Lake Tahoe
Homewood
Truckee Meadows Reservoir
Hell Hole Reservoir
Colfax
Weimar
Michigan Bluff
Foresthill
Meadow Vista
Applegate
Clipper Gap
Sheridan
Bowman Lake
Auburn
Ophir
Newcastle
Penryn
Loomis
Rocklin
Roseville
Lincoln
Folsom Lake
Figure 10-5
Solid Waste Management Facilities
LEGEND
Existing regional sanitary landfills
Existing surrounding land uses
AG = Agricultural
C = Commercial
F = Forestry
I = Industrial
R = Residential
Rec = Recreational
Existing transfer stations
Inactive/closed landfill sites
Source: Clendenen Engineers, 1988
Prepared by:
Placer County Planning Dept./
Cartographic Section and
Jones & Stokes Associates

Auburn Municipal Airport and Industrial Park. County land uses adjacent to the facility include industrial park and commercial development. A large convalescence hospital is located immediately west.

- Meadow Vista Transfer Station. This facility occupies 27 acres at an inactive landfill site. It is located about 3 miles north of Meadow Vista at the end of Combie Road. A large gravel and hardrock quarrying operation is located to the west.

- Foresthill Transfer Station. This facility occupies 84 acres at an inactive landfill site. It is located off Todd Valley Road in the Foresthill area. The area was previously placer mined. The lands to the south, east, and west are zoned for forestry, and the zoning to the north is for industrial uses.

- Berry Street Mall Transfer Station. This facility occupies 26 acres at an inactive landfill site. It is located in the City of Roseville at the end of Berry Street. Land uses to the north and west are open grassland. An electrical substation and the closed landfill are located to the east, and a truss fabrication plant is located to the south.

- Dutch Flat Transfer Station. This 5-acre facility is located on Lincoln Road approximately 1 mile south of Dutch Flat. The area has been hydraulically mined and the Southern Pacific Railroad tracks cross the site. (Siren 1989.)

Wastes from the Dutch Flat Transfer Station are taken to the Eastern Regional Landfill. Wastes from the other four transfer stations are taken to the Western Regional Landfill for disposal.

Illegal Disposal of Solid Waste

Placer County has a significant problem with illegal dumping of solid waste material. Several tons of debris have been dumped into ditches and off embankments in rural regions of Placer County, particularly in the Dutch Flat-Gold Run area near the Nevada County border. Illegal disposal of garbage has the potential to contaminate groundwater supplies. The problem appears to persist for three reasons:

- the public is unaware of the environmental consequences of illegal dumping;

- increased costs of waste disposal have caused residents to avoid participation in a waste collection service (for example, every third resident in the Dutch Flat area has waste collection service); and

- all the small Placer County landfills have closed or are inactive, making legal waste disposal sites less accessible for some residents (Payton 1991).

Solid Waste Management Plan

The Placer County Solid Waste Management Plan (CoSWMP), revised in 1989 and administered primarily by the Placer County Department of Public Works, is designed to guide short-, mid-, and long-term (from 5 to 20 years) solid waste management and disposal. The purpose of the plan is to provide a countywide integrated solid waste management program that addresses residential, municipal, and industrial solid waste and covers the following topics:

- collection,
- transportation,
- source separation,
- processing,
- waste reduction,
- recycling,
- resource recovery,
- public education, and
- disposal. (Siren 1989.)

Countywide Integrated Waste Management Plan

Recent state legislation resulted in a comprehensive reorganization of California's solid waste management planning process (AB 939 [Sher 1989], the California Integrated Waste Management Act of 1989). This legislation replaced the CoSWMP with the Countywide Integrated Waste Management Plan (COIWMP) (Lucchio pers. comm.). Placer County expects to complete its COIWMP and submit it for review to the California Integrated Waste Management Board by January 1, 1994 (Martin pers. comm.). As required by state law, revisions of the Placer COIWMP will occur every 5 years thereafter.

Resource Recovery

Recent emphasis of state law is on diverting more of the waste stream from landfills by promoting more resource recovery. The County is required to develop a Source Reduction and Recycling Element (SRE) as part of the COIWMP, identifying how the county will divert 25 percent of solid waste from its landfills and incinerators by 1995 and 50 percent by 2000. The County SRE will address the following topics:

- waste stream characterization,
- source reduction,
- recycling,
- composting,
- solid waste facility capacity,
- public education,
- funding,
- special waste, and
- household hazardous waste. (Lucchio pers. comm.)

Placer County expects to complete a draft SRE in early 1992 (Martin pers. comm.).

The County has already initiated several resource recovery activities involving materials recycling and plans to augment existing recycling efforts by constructing a materials recovery facility (MRF) in 1994 (Martin pers. comm.). The MRF will be a highly mechanized permanent facility that will include a buy-back area, an area to deposit mixed loads of commercial or residential waste, and an area for construction and demolition debris. The Placer County MRF will probably be constructed close to the Western Regional Sanitary Landfill, 15 miles north of the City of Roseville. The County expects to reduce landfilled solid waste by 25 percent when the MRF is operational. (Siren 1989.)

Solid Waste Facility Siting

State regulations provide minimum criteria that govern siting of any new solid waste facilities, with more stringent regulations provided at the regional and local levels. The Regional Water Quality Control Board has established development standards for siting solid waste facilities that have been incorporated by reference into the existing Placer CoSWMP. At the local level, a solid waste facility must be consistent with the applicable city or county general plan, adjacent land uses must be compatible with solid waste facilities, and the county and the California Integrated Waste Management Board must determine whether a proposed solid waste facility is consistent with the CoSWMP (or the COIWMP). (Siren 1989.)

Placer County recently acquired a 480-acre parcel adjacent to the existing Western Regional Landfill as a planned landfill expansion site. Development of this site would add approximately 35 years to the existing capacity provided by the Western Regional Landfill (Martin pers. comm.). The existing landfill and the expansion area are expected to be permanently retained for waste management purposes and will probably provide a site for the technologically advanced processes involved in integrated waste management. Because the expansion area is separated from the Western Regional Landfill by Fiddyment Road, it would operate as a separate waste management facility. (Siren 1989.)

No other new solid waste landfill facilities presently are planned for Placer County, but the COIWMP is expected to include a countywide siting element that addresses future siting needs.

HAZARDOUS WASTE

Hazardous wastes include any waste material that poses a significant hazard to human or environmental health and safety (see "Hazardous Waste" in the Glossary).

Hazardous Waste Production and Disposal

Placer County generated approximately 5,400 tons of hazardous waste in 1986, the last year estimates were available. The County expects to be producing approximately 12,660 tons per year by 2000. About half of this projected waste is anticipated to result from cleanup activities at existing contaminated sites. Most of the remainder, approximately 6,100 tons, is expected to be generated by existing and planned industrial facilities. Placer County households are expected to be producing about 227 tons of hazardous waste by 2000. (Clendenen Engineers 1988.)

The State of California does not maintain a ranking system that compares quantities of hazardous waste produced by each county; however, hazardous waste generation diminishes in rural northern counties, compared to industrialized parts of the state. Placer County is not among the top generators of hazardous waste. (Frantz pers. comm.)

A variety of commercial and industrial businesses in Placer County produce hazardous waste. In 1986, the following types of industries generated hazardous waste:

- pesticide users or application services;
- chemical manufacturers;
- formulators of paints, lacquers, enamels, varnishes, or pesticides;
- laundries;
- photographic services;
- funeral homes and crematories;

- cleaning and maintenance services;
- equipment repair;
- vehicle maintenance;
- construction;
- motor freight terminals;
- metal manufacturing;
- furniture or wood manufacturing and refinishing;
- printing and ceramics;
- educational and vocational shops;
- analytical and clinical laboratories; and
- wholesale and retail sales. (Clendenen 1988)

By 2000, Placer County anticipates a 30 percent reduction in the amount of industrial hazardous waste generated. If this reduction does not occur, about 2,590 additional tons of industrial hazardous waste will be produced in Placer County by 2000. Techniques to decrease the quantity of hazardous waste are expected to focus on reducing, avoiding, or eliminating the generation of wastes in production processes. Additional efforts will concentrate on public education programs to encourage recycling of waste oil and reducing use of hazardous materials. (Clendenen Engineers 1988.)

Presently, no designated treatment, storage, or disposal (TSD) facilities exist in Placer County. Hazardous waste removed from the generating business or industry by road or railway to a designated TSD must be accompanied by a shipping manifest, which is a state form detailing the nature of a hazardous waste, the point of origin, and the disposer. The California Department of Health Services (DHS) manifests for 1986 show that Placer County shipped 3,043.67 tons of hazardous waste to a variety of TSD facilities in the following counties:

- Contra Costa,
- Kern,
- Kings,
- Los Angeles,
- Sacramento,
- San Mateo,
- Santa Barbara,
- Santa Clara, and
- Solano.

In 1986, approximately 14 percent of hazardous waste removed from Placer County went to unknown TSD facilities. The disposal of about 2,185 tons of hazardous waste was not documented by the manifest system. (Clendenen Engineers 1988.)

Contaminated Sites

In some sites in Placer County, hazardous wastes have been improperly disposed of or surface impoundments have possibly contaminated groundwater supplies. A disposal site is an area where hazardous wastes have been finally discarded or deposited, whereas a surface impoundment area (also called a toxic pit) contains liquid hazardous waste and functions as a waste management site (see "Surface Impoundment" in the Glossary). Land disposal of hazardous wastes was banned after May 8, 1990 (Clendenen Engineers 1988).

DHS has identified the following old hazardous waste disposal sites in Placer County that are eligible for state bond money for cleanup:

- Southern Pacific Transportation Company (SP) in Roseville has five previously unlined surface impoundments used for treatment and disposal of liquid wastes generated from locomotive and other railyard maintenance operations. Contaminated soil has been removed from one of the sites; cleanup of all the sites is expected to be accomplished by 2000.

- American Forest Products in Foresthill contains an old disposal site associated with lumber processing operations. Approximately 46 tons of contaminated soil were removed in 1985. Monitoring activities are continuing.

- H. Investment Company in Rocklin removed slightly more than 35 tons of contaminated soil between 1983 and 1986. The contamination of the site was caused by improper disposal of paint sludge, which resulted in leaching of heavy metals (Miners pers. comm.). Monitoring activities are continuing.

- Bohemia in Lincoln has an old disposal site associated with lumber processing activities. Cleanup and site monitoring are underway.

- Auburn Sanitary Landfill has an old disposal site. The state has screened the site and cleanup is planned. (Clendenen Engineers 1988.)

The Central Valley Regional Water Quality Control Board (CVRWQCB) lists three facilities that include closed toxic pits. The first is the SP site described previously. The second is the abandoned Dairy Farm Mine in Lincoln. This pit was covered over; reclamation and monitoring activities are continuing. The third is Gladding McBean, also located in Lincoln. This site consisted of slag waste that resulted from the manufacture of clay bricks; it has been cleaned up. Gladding McBean has modified its operating procedures and created a new surface impoundment area that does not contain hazardous waste. (Vaughn pers. comm.) The Lahontan Regional Board of the Regional Water Quality Control Board also investigates and requires cleanup of toxic contamination in the Lake Tahoe/Truckee area, including leaking from underground tanks.

In 1985, the California State Water Resources Control Board (now under California Environmental Protection Agency [CalEPA]) estimated that 720 leaking underground storage tanks were in Placer County and most contained petroleum products. Countywide removal of leaking tanks and replacement with double containment tanks and monitoring systems is expected to be complete by 2000 (Clendenen Engineers 1988). The Environmental Health Division of the county Health and Medical Services Department (Environmental Health) maintains a periodically updated listing of underground storage tanks that currently documents the status of cleanup activities on approximately 120 sites throughout the county. Cleanup activities would generally include soil removal and a variety of onsite treatments, as determined necessary by CVRWQCB and Environmental Health.

Placer County Hazardous Waste Management Plan

Placer County adopted a Hazardous Waste Management Plan (CHWMP) in January 1989, prepared according to guidelines established by state law (Section 25135 of the California Health and Safety Code, known as AB 2948 [Tanner 1986]).

The Placer CHWMP includes data on the quantity and types of hazardous waste currently generated within the county and the six incorporated areas, evaluates the need for TSD facilities through 2000 based on projected waste generation, and includes policies and implementation measures (Clendenen Engineers 1988). The Placer County Board of Supervisors adopted the CHWMP in January 1889 (Miners pers. comm.).

The Placer CHWMP was subsequently submitted for review to DHS, which administered the local hazardous waste management plan process until July 17, 1991. At that time, reorganization of state agencies and the formation of CalEPA resulted in a transfer of responsibility for the administration of county hazardous waste plans from DHS to the Department of Toxic Substances Control, under CalEPA (Frantz pers. comm.).

DHS did not approve the Placer CHWMP because of disagreements over the County's "fair share" policy concerning siting of TSD facilities (Miners pers. comm.). According to the Placer County CHWMP, "fair share denotes that each county is responsible for the disposition of its own wastes, that is, responsible for its fair share of waste management." Presently, Placer County does not intend to revise and resubmit its CHWMP to the state. The Placer County Planning Department may consider adopting the CHWMP as a county reference document associated with the general plan revision. If this occurs, future revisions to the Placer CHWMP would take place concurrent with general plan updates. (Miners pers. comm.)

TSD Facility Needs and Siting

According to the Placer CHWMP, the county "does not produce enough hazardous waste by itself to justify a treatment or disposal facility, nor is it projected to in the foreseeable future." Placer County plans to continue relying on TSD facilities outside of the county until demand for these facilities exceeds their capacity or until onsite treatment of hazardous waste becomes more cost effective than offsite disposal. Future technological advances, either in the way of materials substitution or improved industrial operations, may significantly reduce hazardous waste. (Clendenen Engineers 1988.)

Currently, Placer County has no plans to pursue interjurisdictional agreements to establish a multicounty TSD facility. If Placer County were to consider such a facility in the future, it could be any of the following types:

- transfer and storage,
- treatment,
- recycling,
- solidification or stabilization,
- incineration, or
- repository for treated residues. (Clendenen Engineers 1988.)

DHS (1987) has established siting criteria for the location of TSD facilities. These criteria have been incorporated by reference into the Placer CHWMP. Placer County has generally indicated that TSD facilities could not be located in wetland areas, in areas subject to 100-year flood events, or on national forestland. Any future TSD facility in Placer County probably would be considered for location only in areas designated for industrial uses.

10.6 AIRPORT-RELATED HAZARDS

Airport-related hazards are generally associated with aircraft crashes, especially during takeoffs and landings, or with hazards to aircraft operations associated with incompatible land uses, such as power transmission lines or high structures in the vicinity. This section describes potential safety hazards associated with the two public use airports located in Placer County and with Tahoe-Truckee Airport, located within Nevada County but extending into Placer County.

AIRPORT LAND USE PLANS

In 1982, local airport land use commissions (ALUCs) were mandated by state law to prepare comprehensive land use plans (CLUPs) that would apply to public use airports and nearby areas (California Public Utilities Code Section 21670 et. seq.). The purpose of these CLUPs is to maintain airspace for the safe operation of aircraft in the vicinity of the airport and prevent exposing people to substantial noise levels or safety hazards.

The Foothill Airport Land Use Commission (FALUC) has prepared CLUPs for the three public use airports serving Placer County. These plans generally describe the airport configurations, planned improvements, and safety areas. The safety areas include clear zones, approach/departure zones, and overflight zones. Each of these safety areas has its own land use restrictions related to height, distracting visual features, and expected concentrations of people and noise sensitivity. Existing land use maps indicate that specific conflicts are present within the safety areas. These conflicts are a result of previous land use decisions made by the County, such as the construction sensitive receptors (apartments, parks, and convalescent homes) near airports. Since the adoption of the CLUPs by the FALUC, Placer County has not approved any development projects that conflict with the land use compatibility standards developed under the plans.

The Sacramento Area Council of Governments (SACOG), acting as the Sacramento area's airport land use commission, has adopted a CLUP for McClellan Air Force Base. A portion of a Safety Zone extends in to Placer County from McClellan CLUP, in the area south of Baseline Road and west of Watt Ave., in the Dry Creek/West Placer Community Plan area (See Figure 10-9).

The CLUPs and the recommendations of ALUC are to be used by counties and cities to determine the consistency of development projects with airport safety. The FALUC has the authority to require a review of Placer County's proposed actions, regulations, and permits for CLUP consistency determinations (California Public Utilities Code Section 2167.5); however, Placer County, as requested by the FALUC, reviews development proposals and only notifies the FALUC if county staff determines that a project may conflict with CLUP restrictions. The FALUC has adopted a fee schedule to obtain reimbursement for providing consistency determinations (Engle pers. comm.).

All CLUPs have been adopted expect for the Auburn Airport. The CLUP for the Auburn Airport was not adopted because the city's master plan for the airport was incomplete.

CLUPs are not required for the private airports and landing strips. At least four such private facilities were located in Placer County in 1971 (Aviation Plan 1971).

AIRPORT CLEAR ZONES AND SURROUNDING LAND USES

Safety zones for public use airports are indicated on Figure 10-9. More detailed CLUP maps should be used to evaluate the location of airport safety zones relative to specific properties. Land use issues associated with each of these airports are identified in the following discussions.

Lincoln Municipal Airport

Lincoln Municipal Airport is located within the City of Lincoln. Existing Placer County land uses surrounding the airport include medium- and low-density residential and agricultural uses to the south and east; medium- and low-density residential, industrial, and agricultural uses to the north; and low-density residential and agricultural uses to the west (Clark pers. comm.).

Concern over potential conflicts between land use restrictions in the CLUP and existing or planned land uses is limited to a barn that recently was erected in the unincorporated area north of the airport by a private landowner. The barn is located within the clear zone and may conflict with CLUP land use restrictions. (Hollatz, Dellwo pers. comms.)

The Lincoln Airport CLUP delineates two overflight zones around the airport. The outer overflight zone extends 10,000 feet from the runway, and the inner overflight zone extends 1 mile from the runway. The City is proposing that the FALUC amend the CLUP to include more strict land use restrictions on the inner zone; however, the City is planning development of a park site within the inner overflight zone that may include facilities that would be inconsistent with the inner zone's more limited list of compatible land uses (Dellwo pers. comm.). The City's proposed amendments also would limit the density of residential development within the inner overflight zone to 1 unit per 20 acres or less (Campbell pers. comm.).

Auburn Airport

The Auburn Airport is located in the City of Auburn and is surrounded by unincorporated land. Existing land uses surrounding the airport include low-density residential uses to the north, industrial uses to the south and west, and agricultural and low-density residential uses to the east.

Concern exists over land uses that may conflict with Auburn Airport CLUP restrictions. A gymnasium located west of the airport in the unincorporated area may conflict with the CLUP land use restrictions in the future if an expansion of the airport is approved (Hollatz, Brun, Clark pers. comms.). Similarly, the Auburn Faith Hospital is partially within the overflight zone and may also have conflicted with CLUP restrictions if a specific exception for that facility had not been included in the CLUP (Hollatz, Clark pers. comms.). Sullivan Ranch subdivision, located southwest of the airport, also is within the overflight zone and exceeds the current CLUP maximum allowable residential density of 1 unit per 2 acres (Brun pers. comm.) although it did not violate the CLUP standards at the time the project was approved by the County.

Placer Joint Union High School District has proposed to locate a new high school adjacent to the existing Chana Continuation School, which was constructed just over 1 mile from the Auburn Airport. New state guidelines require the California Department of Education to closely examine safety issues when locating schools within 2 miles of an airport, instead of the 1 mile that was specified in the previous guidelines. (Brun pers. comm.)

Tahoe-Truckee Airport

The Tahoe-Truckee Airport is located approximately 2 miles from central Truckee in Nevada County. Existing Placer County land uses south of the airport include agricultural and high-density residential uses (Clark pers. comm.). Development could occur south of runway 19 within the approach/departure zone. Such development may include residences and a hotel that could be adversely affected by airport noise (Pegg pers. comm.).

Blue Canyon Airport

Blue Canyon Airport is closed and is used for emergency landings only. The airport also is not maintained and is rendered unusable by winter snowfall.

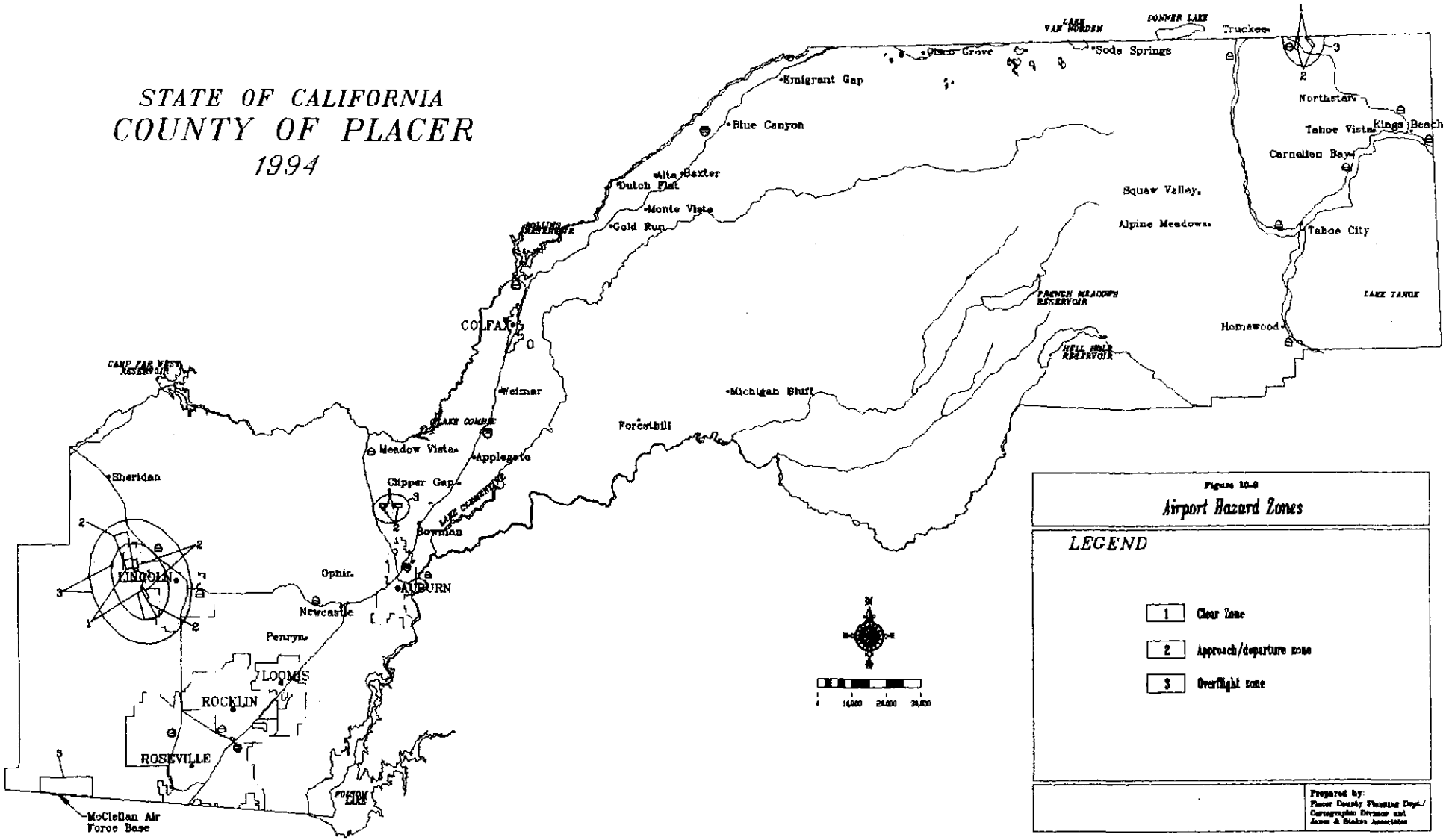
Private Landing Strips

Land uses around the private landing strips in Placer County are variable. Usually, these facilities were developed by individual property owners. These landing strips and agricultural airports are exempt from California Department of Transportation (Caltrans) requirements for general aviation airports; however, a private airport must be designed so that each runway is at least 200 feet from property lines at the ends and 50 feet from property lines on the sides. Each runway also must be of adequate construction and length to accommodate any aircraft that may be operated by the landowner or guests. The type of adjacent land uses allowed and other airport design considerations are determined by the landowner or are defined in the local jurisdiction's conditional use permit. (Michael pers. comm.)

McClellan Air Force Base

New information provided by the Sacramento Area Airport Land Use Commission indicates that recent modification of flight tracks regularly used by aircraft using the McClellan Air Force Base runway have extended the safety hazard area due to overflights to the north and just inside Placer County. Specifically, flight track 16C2, used by C-135A & B air refueling tanker aircraft for "touch and go" maneuvers, arcs just across the Sacramento/Placer County line south of Base Line Road. Changes in the noise contours resulted in additional noise exposure to Placer County as well. An average of 2,855 operations are flown on this flight track annually.

In response to these changes, the Foothill Airport Land Use Commission adopted a Policy Plan for the McClellan Air Force Base Airport Area of Influence in June, 1994. This Policy Plan established a overflight zone (Safety Area 3) in Placer County (See Figure 10-9) and adopted by reference, the Land Use Compatibility Guidelines that are contained in the McClellan Air Force Base Comprehensive Land Use Plan.


STATE OF CALIFORNIA
COUNTY OF PLACER
1994
Truckee
Donner Lake
Lake Van Norden
Soda Springs
Cisco Grove
Emigrant Gap
Blue Canyon
Alta
Baxter
Dutch Flat
Monte Vista
Cold Run
Colfax
Weimar
Michigan Bluff
Foresthill
Meadow Vista
Applegate
Clipper Gap
Bowman
Auburn
Ophir
Newcastle
Penryn
Loomis
Rocklin
Roseville
Lincoln
Sheridan
McClellan Air Force Base
Folsom Lake
Lake Combie
Lake Clementine
Camp Far West Reservoir
Rollins Reservoir
Faucherie Meadows Reservoir
Hell Hole Reservoir
Lake Tahoe
Northstar
Tahoe Vista
Kings Beach
Carnelian Bay
Squaw Valley
Alpine Meadows
Tahoe City
Homewood
Figure 10-9
Airport Hazard Zones
LEGEND
1 Clear Zone
2 Approach/departure zone
3 Overflight zone
Prepared by:
Placer County Planning Dept.
Cartographic Division and
Jones & Stokes Associates

10.7 FINDINGS

- The western and central portions of Placer County generally have rather low seismicity, whereas the eastern portion in the vicinity of Lake Tahoe has rather high seismicity and potential for seismic-related damage.

- No inferred faults in Placer County are considered well-defined enough to warrant designation as hazard zones requiring site-specific studies before land development. The potential for surface rupture during a large earthquake in the Tahoe-Truckee area, however, should not be considered remote.

- Some areas in the vicinity of four identified faults could be subject to intensity IX ground shaking. These are principally in the vicinity of the Stampede Valley and Tahoe faults in the Truckee-Tahoe area, where substrates are alluvial with relatively shallow groundwater (less than 30-foot depth), could be subject to intensity IX groundshaking. Critical facilities and schools should not be located in these areas if such groundwater conditions are encountered and confirmed by site-specific geotechnical studies.

- Sites having liquefaction potential could be found within portions of unconsolidated floodplain and lakebed deposits, but probably not within glacial till. Investigative borings in such alluvial deposits should be taken where for construction of buildings of three or more stories, or smaller structures having heavy loads, is proposed.

- Slope instability and landslides are problems in areas of eastern Placer County, as seen in active and inactive landslide deposits.

- Expansive soils, or soils with moderate to high shrink-swell potential occur extensively in most level soils in western Placer County, from Rocklin to the western county line.

- Soils with high and very high erosion hazard are located throughout Placer County.

- High and moderate avalanche hazards are present in isolated zones in eastern Placer County where steep slopes and snow can combine with other factors to induce avalanching.

- Additional rural development and recreation use of public lands will increase the risk of fires in areas with very high fire hazards.

- Existing fire protection is inadequate in some portions of the county.

- Flooding occurs in western Placer County. Future development usually increases flooding by reducing permeable surfaces, concentrating flows, and eliminating storage.

- Illegal dumping of solid waste is a significant problem in Placer County, especially in the rural Dutch Flat-Gold Run area. The Dutch Flat Transfer Station serves this area but is closed to the public.

- The Placer County Hazardous Waste Management Plan has not been approved by the State of California.

- Disposal of almost half of the hazardous waste estimated to have been produced in Placer County may not be documented under the current manifest system.

- There are some potential conflicts between airport land use plan restrictions and planned land uses in Placer County. Placer County has the primary responsibility for determining whether land use conflicts exist in the vicinity of airports.

- Limited notification of the approval of projects within airport safety zones is required. FALUC is only notified by the County when county staff determines that a project may conflict with airport land use plan restrictions. Cities are notified by the County only when projects located within safety areas of the local airport are also within a city's sphere of influence.

10.8 PERSONS CONSULTED

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10.10 GLOSSARY

ALUCs - airport land use commissions

Airport-Related Use - A use that supports airport operations including, but not limited to, aircraft repair and maintenance, flight instruction, and aircraft chartering

Alluvial - Soils deposited by stream action

Alquist-Priolo Special Studies Zones, Seismic Hazard Zone - A seismic hazard zone designated by the State of California within which specialized geologic investigations must be prepared prior to approval of certain new development

Approach/Departure Zone - The air space at each end of a landing strip that defines the glide path, approach path, or take-off path of an aircraft and that should be free from obstruction

Aquifer - An underground, water-bearing layer of earth, porous rock, sand, or gravel, through which water can seep or be held in natural storage; aquifers generally hold sufficient water

CDF - California Department of Forestry and Fire Protection

Caltrans - California Department of Transportation

CDMG - California Division of Mines and Geology

CalEPA - California Environmental Protection Agency

CVRWQCB - Central Valley Regional Water Quality Control Board

CLUPs - comprehensive land use plans

COIWMP - Countywide Integrated Waste Management Plan

Clear Zone - That section of an approach zone of an airport where the plane defining the glide path is 50 feet or less above the centerline of the runway; the clear zone ends where the height of the glide path above ground level is above 50 feet; land use under the clear zone is restricted

Critical Facility - Facilities housing or serving many people, which are necessary in the event of an earthquake or flood, such as hospitals; fire, police, and emergency service facilities; utility "lifeline" facilities, such as water, electricity, and gas supply; sewage disposal; and communications and transportation facilities

DHS - Department of Health Services

Erosion - The loosening and transportation of rock and debris by wind, rain, or running water; the gradual wearing away of the upper layers of earth

Expansive Soils - Soils that swell when they absorb water and shrink as they dry

FALUC - Foothill Airport Land Use Commission

Fault-rupture hazard zones - See Alquist-Priolo Special Studies Zone, Seismic Hazard Zone)

Geological - Pertaining to rock or solid matter

Glacial Till - Unstratified and mixed rock, gravel, sand, and silt deposited directly by glacial ice; the mixed nature of till makes it more resistant to the effects of liquefaction

Hazardous Waste - A waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may do either of the following: cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of, or otherwise managed; unless expressly provided otherwise, hazardous waste includes extremely hazardous waste and acutely hazardous waste

High-Occupancy Structure - All pre-1935 buildings with over 25 occupants, and all pre-1976 buildings with more than 100 occupants

Holocene - The most recent geological time period, extending from the present to 12,000 years ago, earthquake faulting that is determined to have occurred during this time is considered sufficiently active to require designation of the fault under the Alquist-Priolo Act (see Alquist-Priolo Special Studies Zone, Seismic Hazard)

Hydrothermal - Subsurface or surface hot water associated with geologic activity

I - Interstate

Landslide - A general term for a falling mass of soil or rock

Liquefaction - The transformation of loose water-saturated granular materials (such as sand or silt) from a solid to a liquid; a type of ground failure that can occur during an earthquake

Metavolcanic flow rock - Rock composed of ancient volcanic flow material that has been consolidated by heat and pressure

Microzonation - Pertaining to a system for determining the relative intensity of groundshaking in various locations throughout an affected area

Modified Mercalli Intensity Scale - A subjective measure of the intensity of an earthquake by its observed effects (human reactions, structural damage, and geologic effects) and expressed in Roman numerals from I to XII

MRF - Materials recovery facility

Overflight Zone - Generally coincides with the area overflown by aircraft during normal traffic pattern procedures and is typically defined by two arcs with radii of 10,000 feet traced from the ends of the runway(s) and connected by the lines that are tangent to these arcs; the zone includes all areas outside of the clear and approach/departure zones

PAHA - Potential Avalanche Hazard Area

Safety Areas - Airport approach/departure zones, clear zones, and overflight zones

Safety Element - One of the seven state-mandated elements of a local general plan; it contains adopted goals, policies, and implementation programs for the protection of the community from any unreasonable risks associated with seismic and geologic hazards, flooding, and wildland and urban fires; many safety elements also incorporate a review of police needs, objectives, facilities, and services

Seismic - Caused by or subject to earthquake or earth vibration

Shrink-Swell Potential - Soils that shrink when dry and swell when wet, which cracks foundations and can cause property damage

Slope - Land gradient described as the vertical rise divided by the horizontal run, and expressed in percent

Soil - The unconsolidated material on the immediate surface of the earth created by natural forces that serves as natural medium for growing land plants

Solid Waste - All putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes; demolition and construction wastes; abandoned vehicles and parts thereof; discarded home and industrial appliances; dewatered, treated, or chemically fixed sewage sludge that is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes; solid waste does not include hazardous waste

SRE - Source Reduction and Recycling Element

SP - Southern Pacific Transportation Company

SRA - State Responsibility Lands - Areas of the state in which the financial responsibility of preventing and suppressing fires has been determined by the State Board of Forestry to be primarily the responsibility of the state

Surface Impoundment or Impoundment - Waste management unit or part of a waste management unit that is a natural topographic depression, artificial excavation, or diked area formed primarily of earthen materials, although it may be lined with artificial materials, which is designed to hold an accumulation of liquid hazardous wastes or hazardous wastes containing free liquids, including, but not limited to, holding, storage, settling, or aeration pits, evaporation ponds, percolation ponds, other ponds, and lagoons; surface impoundment does not include a landfill, a land farm, a pile, emergency containment dike, tank, or an injection well

TNF - Tahoe National Forest

TSD - Treatment, storage, or disposal

USFS - U.S. Forest Service

Chapter 11
Noise

CHAPTER 11

NOISE

11.1 INTRODUCTION

This chapter provides background information on noise considerations, including noise conditions and sources. Noise considerations are an intimate part of community land use planning that protects public health and welfare. The Noise Element is a mandatory part of the general plan.

The State Office of Planning and Research Noise Element Guidelines require that major noise sources be identified and quantified by preparing generalized noise contours for current and projected conditions. Significant noise sources include traffic on major roadways and highways, railroad operations, airports, and representative industrial activities and fixed noise sources.

Noise modeling techniques and noise measurements were used to develop generalized L_{dn}[1] noise contours for the major roadways, railroads and fixed noise sources in the Placer County General Plan study area for existing conditions.

Noise modeling techniques use source-specific data including average levels of activity, hours of operation, seasonal fluctuations, and average levels of noise from source operations. Modeling methods have been developed for a number of environmental noise sources including roadways, railroad line operations, railroad yard operations and industrial plants. Such methods produce reliable results as long as data inputs and assumptions are valid. The modeling methods used in this report closely follow recommendations made by the State Office of Noise Control, and were supplemented where appropriate by field-measured noise level data to account for local conditions. The noise exposure contours are based upon annual average conditions. Because local topography, vegetation or intervening structures may significantly affect noise exposure at a particular location, the noise contours should not be considered site-specific.

A community noise survey was conducted to describe existing noise levels in noise-sensitive areas within the Placer County General Plan study area so that noise level performance standards could be developed to maintain an acceptable noise environment.

11.2 NOISE SOURCES

ROADWAYS

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop L_{dn} contours for all highways and major roadways in the Placer County General Plan study area. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including Caltrans. The current version of the model is based upon the CALVENO noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of the site. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic

[1]. For an explanation of terms used in this report, see the Glossary at the end of this chapter.

conditions, and is generally considered to be accurate within 1.5 dB. To predict L_{dn} values, it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and to adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Traffic data representing annual average traffic volumes for existing conditions were obtained from Caltrans and DKS traffic consultants as summarized in Appendix B. Day/night traffic distribution and truck mix were based upon Caltrans and BBA file data. Day/night traffic distributions for I-80, S.R.65, S.R.49, S.R.193, Auburn-Folsom Road, Auburn-Foresthill Road, and Douglas Boulevard were based upon continuous 24-hour noise level measurements. Figure 11-1 shows the locations of the 24-hour roadway noise monitoring sites, and Table 11-1 shows the effective day/night traffic distribution for the those roadways at the noise monitoring sites. Using these data and the FHWA methodology, traffic noise levels as defined by L_{dn} were calculated for existing traffic volumes. Distances from the centerlines of selected roadways to the 60 and 65 dB L_{dn} contours are summarized in Table 11-2. Figure 11-2 shows the locations of the 60 dB L_{dn} roadway noise contours.

In some cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. Therefore the distances reported in Table 11-2 are estimates of noise exposure along roadways in Placer County.

TABLE 11-1

ROADWAY TRAFFIC DISTRIBUTION
Day/Night Percentages

Roadway	Area Description	Monitoring Date	Traffic Distribution	
			% Day	% Night
I-80	Marion Dr.	August 1991	78	22
I-80	Penryn	March 1990	60	40
I-80	Old Airport Rd	July 1991	73	27
S.R. 49	Lone Star Rd	July 1991	78	22
S.R. 65	Stanford Ranch	August 1991	80	20
S.R. 193	Lyles Lane	December 1991	87	13
Douglas Blvd	Sierra College	January 1988	86	14
Auburn/Foresthill	Ponderosa Wy	May 1991	78	22
Auburn/Folsom Rd	Moss Lane	December 1991	88	12

PLACER COUNTY GENERAL PLAN

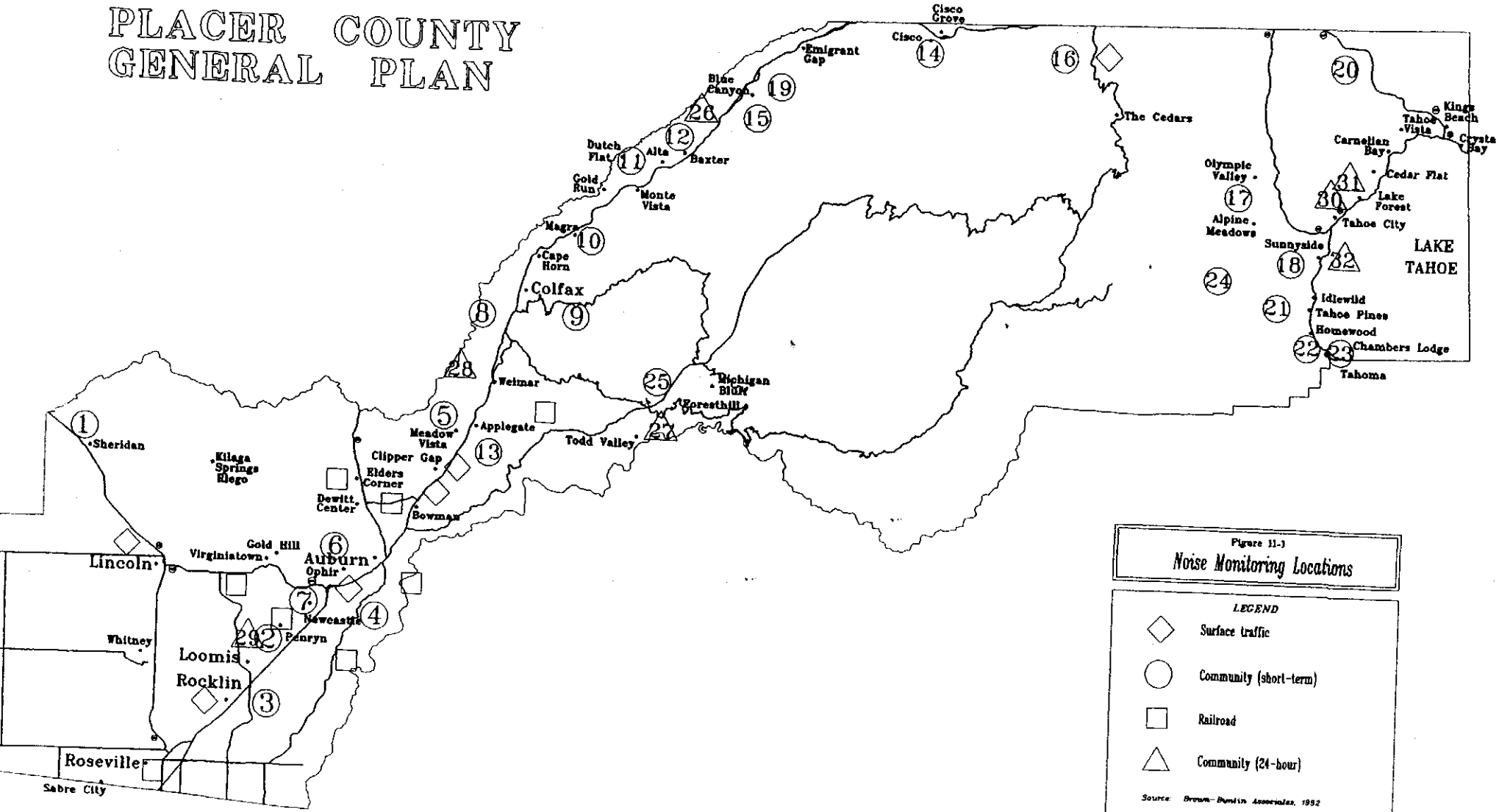


Figure 11-3

Noise Monitoring Locations

LEGEND

- Surface traffic
- Community (short-term)
- Railroad
- Community (24-hour)

Source: Brown-Buntin Associates, 1992

Scale 1" = 30,000'

Date: 8/14/92

Prepared by: Jones & Stokes Assoc.

PLACER COUNTY GENERAL PLAN

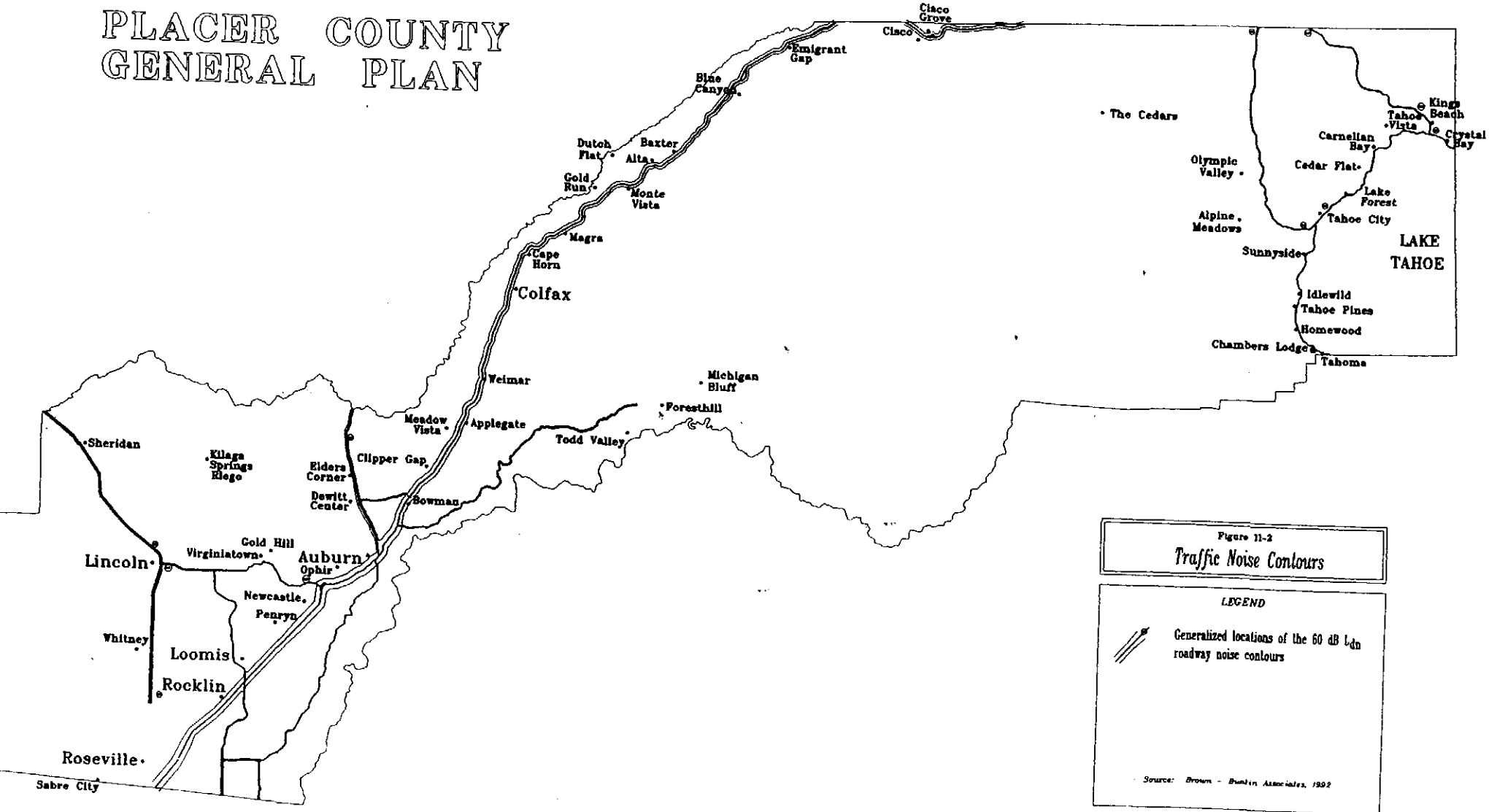


Figure 11-2

Traffic Noise Contours

LEGEND

Generalized locations of the 60 dB L_{dn} roadway noise contours

Source: Brown - Buntin Associates, 1992

Scale 1" = 30,000'

Date: 8/14/92

Prepared by:
Jones & Stokes Assoc.

TABLE 11-2

NOISE CONTOUR DATA
DISTANCE (FEET) FROM CENTER OF ROADWAY
TO L_{dn} CONTOURS

Segment	Description	Existing	
		60 dB	65 dB
I-80:			
1	Sacramento County Line to Riverside Drive	1586	736
2	Riverside Drive to Douglas Boulevard	1586	736
3	Douglas Boulevard to Atlantic Street	1564	726
4	Atlantic Street to Route 65	1251	581
5	Route 65 to Rocklin Road	1216	564
6	Rocklin Road to Sierra College Boulevard	1182	549
7	Sierra College Boulevard to Dixon/Loomis Road	1171	544
8	Dixon/Loomis Road to Penryn Road	1148	533
9	Penryn Road to Route 193	1488	691
10	Route 193 to Route 49	1441	669
11	Route 49 to Auburn Ravine	1394	647
12	Auburn Ravine to Bell Road	1128	523
13	Bell Road to Dry Creek Road	1090	506
14	Dry Creek Road to Clipper Gap Road	1090	506
15	Clipper Gap Road to Applegate Road	972	451
16	Applegate Road to Heather Glen	992	460
17	Heather Glen to Weimar Cross Road	952	442
18	Weimar Cross Road to Illinois Town Road	883	410
19	Illinois Town Road to Route 174	873	405
20	Route 174 to Magra	801	372
21	Magra to Gold Run	791	367
22	Gold Run to Monte Vista	757	351
23	Monte Vista to Alta Road	757	351
24	Alta Road to Baxter	757	351
25	Baxter to Drum Forebay Road	704	327
26	Drum Forebay Road to Blue Canyon	720	334
27	Blue Canyon to Pitts Lake	720	334
28	Pitts Lake to Carpenter Gap	708	329
29	Carpenter Gap to Yuba Gap	704	327
30	Yuba Gap to Cisco Grove	735	341
31	Cisco Grove to Hampshire Rocks	733	340
32	Hampshire Rocks to Kingvale	741	344
S.R. 65:			
33	I-80 to Harding Boulevard	477	222
34	Harding Boulevard to Blue Oaks Boulevard	477	222
35	Blue Oaks Boulevard to Sunset Boulevard	456	212
36	Sunset Boulevard to Industrial Boulevard	436	202
37	Industrial Boulevard to Moore Road	440	204
38	Moore Road to Gladding Road	287	133
39	Gladding Road to Sheridan (F Street)	352	163
40	Sheridan (F Street) to Yuba County Line	375	174

Segment	Description	Existing	
		60 dB	65 dB
S.R. 193:			
41	Route 65 to Auburn Ravine	174	81
42	Auburn Ravine to Sierra College Boulevard	248	115
43	Sierra College Boulevard to Clark Tunnel Road	152	70
44	Clark Tunnel Road to Gold Hill Road	109	51
45	Gold Hill Road to I-80	134	62
S.R. 49			
46	Forest Hill Road to Lincoln Way	192	89
47	Lincoln Way to I-80	205	95
48	I-80 to Palm Avenue	349	162
49	Palm Avenue to Luther Road	538	250
50	Luther Road to Bell Road	577	268
51	Bell Road to Dry Creek Road	449	208
52	Dry Creek Road to Nevada County Line	418	194
S.R. 174:			
53	I-80 to Auburn Street	139	64
54	Auburn Street to Main Street	72	33
55	Main Street to Rollins Lake Road	70	33
56	Rollins Lake Road to Nevada County Line	57	27
S.R. 20:			
57	I-80 to Nevada County Line	103	48
S.R. 89:			
58	El Dorado County Line to Pineland Drive	96	45
59	Pineland Drive to S.R. 28	108	50
60	S.R. 28 to Squaw Valley	166	77
61	Squaw Valley to Nevada County Line	187	87
S.R. 28:			
62	S.R. 89 to Tahoe State Park	120	56
63	Tahoe State Park to Lake Forest Drive	166	77
64	Lake Forest Drive to Lardin Way	141	65
65	Lardin Way to Carnelian Bay Road	108	50
66	Carnelian Bay Road to Granite Road	95	44
67	Granite Road to National Avenue	100	47
68	National Avenue to S.R. 267	121	56
69	S.R. 267 to Coon Street	99	46
70	Coon Street to Nevada State Line	106	49
S.R. 267			
71	Nevada County Line to Tahoe Truckee Airport Rd.	157	73
72	Tahoe Truckee Airport Road to North Star Road	151	70
73	North Star Road to Martis Peak Road	142	66
74	Martis Peak Road to North Avenue	171	80
75	North Avenue to S.R. 28	92	43

Segment	Description	Existing	
		60 dB	65 dB
Douglas Boulevard:			
76	Sierra College Boulevard to Barton Road	284	132
77	Barton Road to Auburn Folsom Road	286	133
Sierra College Boulevard:			
78	Sacramento County Line to Douglas Boulevard	354	165
79	Douglas Boulevard to Rocklin Road	192	89
80	Rocklin Road to I-80	102	47
81	I-80 to S.R. 193	114	53
Rocklin Road:			
82	Pacific Avenue to I-80	174	81
83	I-80 to Sierra College Boulevard	99	46
Auburn-Folsom Road:			
84	Sacramento County Line to Douglas Boulevard	194	90
85	Douglas Boulevard to Cavitt-Stallman Road	158	73
86	Cavitt-Stallman Road to New Castle Road	86	40
87	New Castle Road to Shirland Tract Road	57	27
Bell Road:			
88	S.R. 49 to New Airport Road	182	84
89	New Airport Road to I-80	209	97
Luther Road:			
90	S.R. 49 to Dairy Road	101	47
91	Dairy Road to Bowman Road	118	55
Auburn-Foresthill Road:			
92	I-80 to Auburn-Foresthill Road	168	78
93	Auburn-Foresthill Road to Ponderosa Way	209	97
94	Ponderosa Way to Todds Valley Road West	268	124
95	Todds Valley Road West to Todds Valley East	214	99
96	Todds Valley East to Mesquite Ridge Road	141	66
Placer Hills Road:			
97	I-80 to Meadow Vista	139	65
Pacific/Taylor Street			
98	King Rd to Penryn Rd	77	36
99	Penryn Rd to S.R. 193	79	36

The effects of factors such as roadway curvature, grade, etc. can be determined from site-specific traffic noise measurements. The noise measurement results can be compared to the FHWA model results by entering the observed traffic volumes, speed and distance as inputs to the FHWA model. The differences between the measured and predicted noise levels can be used to adjust the FHWA model and more precisely determine the locations of the traffic noise contours. Table 11-3 provides some examples of roadway noise calibration results within Placer County, which differ from the FHWA Model prediction results.

TABLE 11-3

EXAMPLE ROADWAY NOISE PREDICTIONS
(Calibration v.s. FHWA Model Results)

Roadway Segment	Vehicles/hour			Dist. feet	L_{eq}, dB		Reason for Difference
	Autos	Med. Trucks	Hvy. Trucks		Measured	Modeled	
I-80 @ Weimar	1864	84	164	1100	45	55	Shielding Topography
SR 267 E. of Summit	208	16	20	50	69	66	Steep Road Grade
I-80 W. of Colfax	1592	80	144	75	69	72	Depressed Roadway/Topography

The differences between the roadway noise calibration and the FHWA model prediction results shown above, are site specific. They are provided to illustrate the potential effects that local topography, roadway grade and elevated receivers can have on noise propagation

Traffic noise contours were not developed for all roadway segments in Placer County. However, Figure 11-3, prepared using the FHWA Model, may be used to estimate the distance to the 60 dB L_{dn} contour for projected volumes of arterial traffic. For arterial traffic, the predicted distance to the 60 dB L_{dn} contour is determined by the Average Daily Traffic Volume (ADT) and the posted speed limit. L_{dn} contours derived from Figure 11-3 are only indicators of potential noise conflicts, requiring more detailed analysis to determine traffic noise levels at any given location.

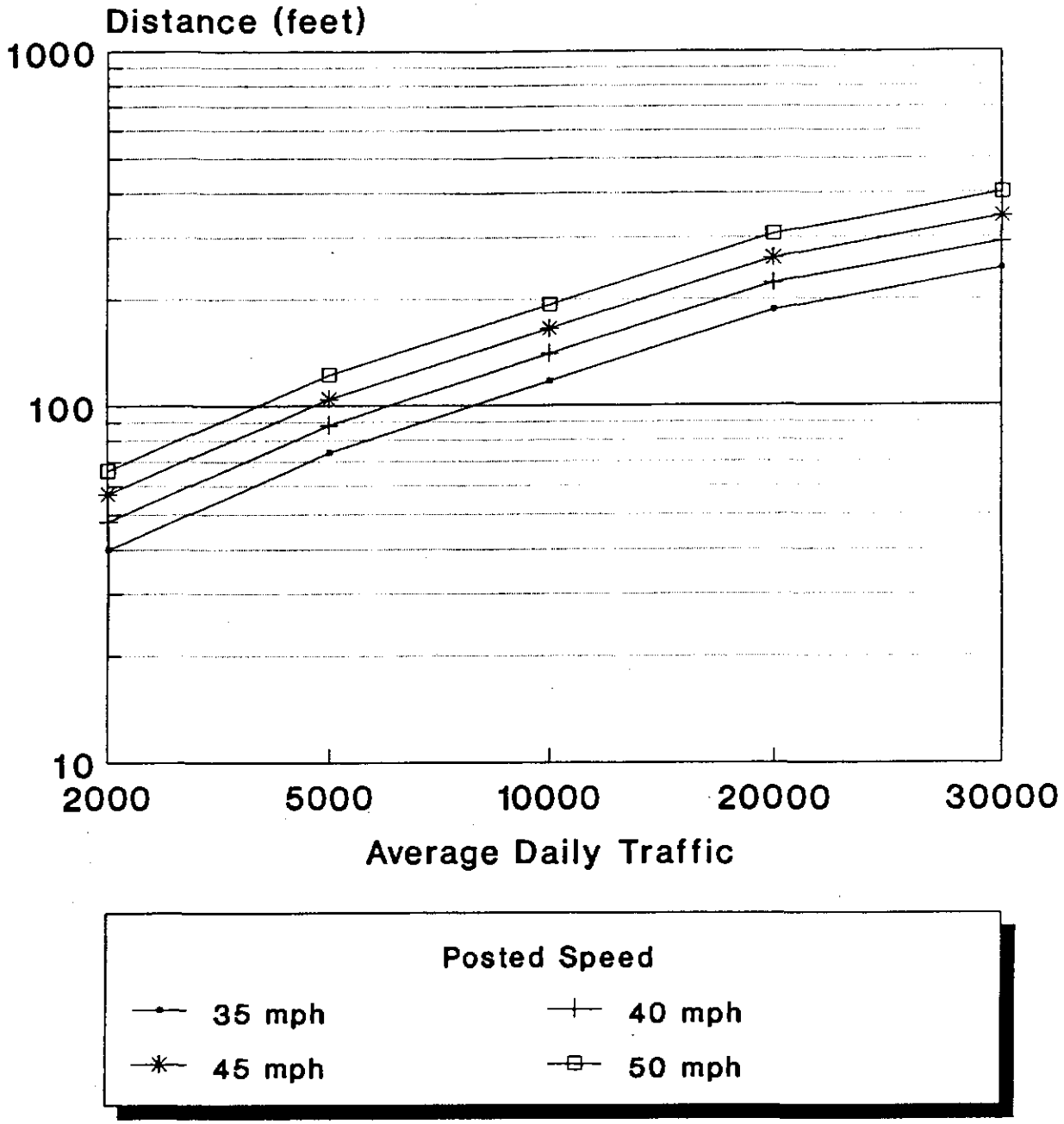
RAILROADS

Railroad activity in the Placer County General Plan study area includes freight and Amtrak activity on the Southern Pacific Transportation Company (SPTCo) trackage. The SPTCo has two major railroad lines within Placer County. The lines include the eastbound/westbound trackage which generally follows the I-80 corridor, and the northbound/southbound trackage which originates at the Roseville humpyard and travels north adjacent to State Route 65.

Operational information obtained from the SPTCo Roseville office indicates that approximately 12 freight trains and 2 passenger trains operate daily on the eastbound/westbound trackage through the plan area. The SPTCo reports that approximately 18 freight trains and 2 passenger trains operate daily on the northbound/southbound trackage. The daily distribution of trains is shown in Table 11-4.

FIGURE 11-3

Distance to 60 dB Ldn Contour
Arterial Traffic



FHWA RD-77-108

TABLE 11-4

RAILROAD LINE OPERATIONAL INFORMATION

Railroad Line	Reported Daily Trains		Reported Nightly Trains	
	Freight	Amtrak	Freight	Amtrak
East/West	9	2	3	0
North/South	11	2	7	0

Noise level measurements were conducted by BBA at various locations within the General Plan study area to determine the contribution of SPTCo railroad operations to the area noise environment. The monitoring locations are shown on Figure 11-1.

The purpose of the noise level measurements was to determine typical sound exposure levels (SEL), number of daily operations, and existing L_{dn} values for railroad line operations in the study area, accounting for the effects of local topography, climate, train speed and other factors which may affect noise generation. The results of the railroad noise measurements are shown in Table 11-5.

TABLE 11-5

RAILROAD NOISE MEASUREMENT RESULTS

Location	Measurement Date(s)	Train Direction	$\overline{SEL}$ (dB)	Horn	Dist feet	Distance to L_{dn} Contour (feet)	
						60 dB	65 dB
Dry Creek Rd	April 18-19, 1991	eastbound	97	No	100	115	55
Rocklin	Aug. 9-10, 1990	eastbound	104	Yes	70	228	106
Sugarbowl Ski Area	June 13-14, 1990	eastbound/westbound	102	Yes	75	240	110
3 Miles N. of Lincoln	Dec. 19-20, 1991	northbound/southbound	105	No	50	485	225
Headquarter House	Aug. 8-9, 1991	eastbound/westbound	102	Yes	100	380	176
Newcastle	Aug. 8-9, 1991	westbound	91	No	100	44	21

To determine the distance to the 60 dB railroad L_{dn} contours, it was necessary to calculate the L_{dn} for typical freight and passenger train operations. This was done using the SEL data collected during the railroad noise measurements and the above-described number and distribution of daily freight and passenger train operations.

The L_{dn} contribution may be calculated as follows:

$$L_{dn} = SEL + 10 \log N_{eq} - 49.4 \text{ dB, where:}$$

SEL is the mean SEL of the event, N_{eq} is the sum of the number of daytime events (7 a.m. to 10 p.m.) per day plus ten times the number of nighttime events (10 p.m. to 7 a.m.) per day, and 49.4 is ten times the logarithm of the number of seconds per day.

Based upon the noise level measurement data shown above, SEL values and resulting distances to the 60 and 65 dB L_{dn} contours associated with train operations can vary. The variations in noise levels associated with train activities are attributed to the speed of the train; presence of a steep grade; presence of intervening topography; and the use of warning horns.

In addition, the east/west trackage through Placer County often splits into two separate rights-of-way, resulting in one-way train traffic (one-half the total number of daily train operations) on those portions of the trackage. Although the SEL value associated with a single train operation may not differ, the resulting locations of the 60 and 65 dB L_{dn} contours will differ from the noise contour locations associated with the trackage accommodating train operations in both directions.

For the purposes of the General Plan Noise Element, it is useful to estimate generalized distances to the 60 and 65 dB L_{dn} noise contours for each of the SPTCo tracks within Placer County. Table 11-6 shows the generalized distances to the noise contours associated with railroad operations within Placer County. Figure 11-4 shows the locations of the railroad noise contours.

TABLE 11-6

APPROXIMATE DISTANCE TO RAILROAD NOISE CONTOURS

Track/Direction	L_{dn}, dB, 100 Feet From Tracks	Distance to L_{dn} Contour (feet)	
		60 dB	65 dB
East-West Track			
one direction	65.4	228	106
both directions	68.7	380	176
North-South Track			
both directions	70.3	485	225

FIXED NOISE SOURCES

The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise which affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components which may be annoying to individuals who live in the nearby vicinity. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels.

PLACER COUNTY GENERAL PLAN

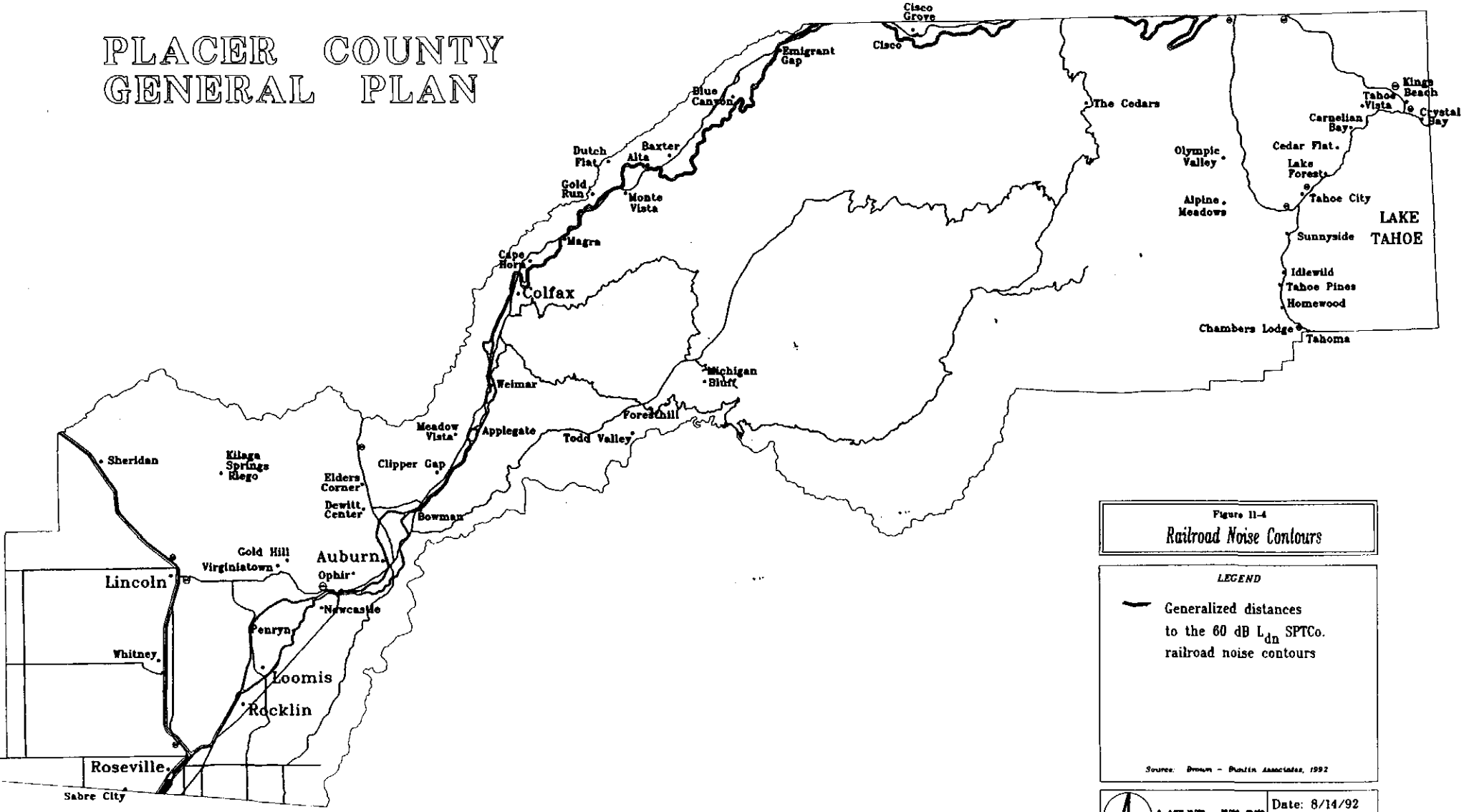


Figure II-4

Railroad Noise Contours

LEGEND

Generalized distances to the 60 dB L_{dn} SPTCo. railroad noise contours

Source: Brown - Buntin Associates, 1992

Scale 1" = 30,000'

Date: 8/14/92

Prepared by: Jones & Stokes Assoc.

From a land use planning perspective, fixed-source noise control issues focus upon two goals: to prevent the introduction of new noise-producing uses in noise-sensitive areas, and to prevent encroachment of noise sensitive uses upon existing noise-producing facilities. The first goal can be achieved by applying noise performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in proximity to noise-producing facilities include mitigation measures to ensure compliance with noise performance standards.

There are numerous industrial facilities which are dispersed throughout the General Plan Study Area. The following descriptions of existing fixed noise sources in the Placer County General Plan study area are intended to be representative of the relative noise impacts of such uses, and to identify specific noise sources which should be considered in the review of development proposals.

Georgia Pacific Corporation - Foresthill

The Georgia Pacific lumber mill is located at 23801 Foresthill Road, in Foresthill. Noise sources associated with the lumber mill include logging trucks, on-site heavy equipment used for moving logs, a saw mill and large blowers. Officials from Georgia Pacific were reluctant to discuss specifics regarding the operation. However, discussions with neighbors and employees indicate that the lumbermill operates 7 days per week and 24 hours per day. Noise level measurements conducted at the trailer park adjacent to the lumber mill indicated that general activity in the lumber mill yard had an average noise level of 53.4 dB L_{eq}. The measurement site was at the lumber mill property line, and approximately 500 feet from the log moving equipment. However, during the noise measurement period, there were numerous loud impulsive sounds due to logs dropping. Maximum noise levels of 79 dB were recorded during the measurement period.

American Olean: 8250 Industrial Ave.

American Olean operations include warehousing and distribution of ceramic tile products. Typical hours of operation are from 7 a.m. to 4:30 p.m. Noise producing equipment used at this facility includes forklifts and about 8 heavy truck trips per day. Observations indicated that noise generated by this facility did not make a significant contribution to the overall ambient noise environment.

HB Fuller Company: 10500 Industrial Ave.

The HB Fuller Company produces industrial adhesives. The facility operates 24 hours per day. Major noise sources associated with the plant operation include truck traffic to and from the site, operation of catalytic incinerators, and fans located in the cooling towers. BBA measured noise from the incinerators and cooling towers during the nighttime hours on September 5, 1991. A constant noise level of 66 dB was measured at a distance of 100 feet from the incinerators. The location of the 50 dB L_{eq} noise contour is estimated to be approximately 650 feet from the property line.

Placer County Landfill

The Placer County Landfill is located at 3195 Athens Road, west of Highway 65 between the cities of Lincoln and Roseville. The facility is open for the disposal of refuse between the hours of 7 a.m. and 5 p.m. Monday through Friday, and 8 a.m. and 5 p.m. on Saturdays and Sundays. Noise producing equipment at this location includes bulldozers, compactors, and scrapers. Traffic to and from the facility and occasional compost chipping and metal baling also contributes to the ambient noise environment in the vicinity of the landfill. Maximum noise levels associated with the operation of equipment at the landfill can range between 76 and 86 dB at a distance of 50 feet. Worst case L_{eq} values at a distance of 100 feet are estimated to be 77 dB.

Refuse Transfer Stations

Refuse transfer stations are located within rural portions of Placer County. Refuse transfer stations include: Meadow Vista Transfer Station on Combie Road; Foresthill Transfer Station on Patent Road; and Gold Run Transfer Station located near the Gold Run exit, adjacent to the railroad tracks.

Major noise sources associated with transfer stations are local automobile traffic to and from the site, and an occasional heavy truck which hauls the garbage from the transfer station to a county land fill. The transfer stations are typically open 5 to 7 days per week, between the hours of 8:00 a.m. and 5:00 p.m. The transfer stations typically have large garbage containers which are available for residents to use. The majority of the transfer stations have no more than 1 truck to and from the site per day for the purposes of removing the garbage.

Chevreaux Aggregates - Meadow Vista

The Chevreaux Aggregate plant is located on Combie Road, west of the town of Meadow Vista. Operations at this facility include the excavation and processing of aggregates. The plant typically operates 5 days per week, 10-12 hours per day, starting in the early morning hours. Noise producing equipment at this site consist of dredgers, conveyors, crushers, vibrating screens, front loaders, and other earth moving equipment. Periodic blasting activities and heavy truck traffic also contribute to the ambient noise environment at this location. There is no asphalt concrete plant at this location, although the plant manager has obtained a permit for such operations. The amount of heavy truck traffic generated by the plant varies with demand, but is typically in the range of 40-200 trucks per day. On December 27, 1991 BBA measured an L_{eq} of 60 dB at a distance of approximately 700 feet from the plant. The location of the 50 dB contour is approximately 2,200 feet from the plant site.

Patterson Sand and Gravel - Sheridan

Patterson Sand and Gravel is located approximately 5 miles north of the town of Sheridan at 8705 Camp Far West Road. Operations at this facility include the excavation and processing of aggregates. The plant typically operates from 5 a.m. to 9 p.m., 5 days per week, with occasional operations on Saturdays as demand requires. Noise producing equipment at this site consist of conveyors, crushers, vibrating screens, front loaders, and other earth moving equipment. There is no asphalt concrete plant at this location. The amount of heavy truck traffic generated by the plant varies with demand. Approximately 150-200 trucks operate to and from the site on a busy day. A plant noise level of 47 dB was measured at a point approximately 1000 feet from the operating plant. The location of the 50 dB L_{dn} contour is estimated at approximately 700 feet from the plant site.

Ophir Road Industrial Area

The Ophir Road industrial area is located on Ophir Road, between Geraldson and Lozanos Roads, west of the City of Auburn. Although there are several light industrial uses in this area, there is no one single major noise source which defines the ambient noise environment at this location. The existing uses include A&A Stepping Stones, Yergins Volkswagon repair shop, Newcastle Auto Parts, Sierra Precast, 50's Auto Body, Livingstons Grading and Paving, Rays Auto Repair, P&S Industrial Park, Nutrena Feeds, Placer Farm Supply, and Foothill Supply. Identifiable noise sources in the area include pneumatic tools, forklifts, and some earthmoving equipment. Delivery trucks and local traffic also contribute to the ambient noise environment. Although BBA was not able to collect noise level data specific to the Ophir Road Industrial Area, noise levels associated with its operation would be of concern if noise-sensitive uses were proposed in the general vicinity.

Newcastle Road Industrial Area

The Newcastle industrial area is located in the city of Newcastle at Old State Highway near Interstate 80. Although there are several light industrial uses in this area, there is no one single major noise source which defines the ambient noise environment at this location. The existing uses include Auburn Hardwoods, Denca Tile, the Sierra Safety Company, Newcastle Automotive, and Ryan Doors and Hardware. Identifiable noise sources in the area include pneumatic tools, forklifts, and saws. Delivery trucks and local traffic also contribute to the ambient noise environment at this location.

Wilson Construction Company - Sheridan

The Wilson Lumber Company is located at the southwest intersection of Riosa Road and Highway 65 in the town of Sheridan. Operations at this facility consist of cutting lumber to specified sizes for residential construction projects. Typical hours of operation are from 7 a.m. to 3:30 p.m. with longer hours as demand requires. The primary noise producing equipment used at this facility includes saws and forklifts. However, the noise generated by this facility is completely masked by Highway 65 traffic noise.

Bohemia Lumber Mill - Lincoln

Although the Bohemia Lumber Mill is located within the City of Lincoln, noise generated at that facility may affect future developments in Placer County. The mill is located at the north end of Lincoln between Highway 65 and Nicholas Road. Noise measurements conducted near the lumber mill indicate that the 50 dB L_{eq} noise contour is located approximately 700 feet from the plant perimeter.

Ultra Power

Ultrapower is a wood waste power plant located near the intersection of Athens Road and Industrial Road in Rocklin. Noise level measurements conducted on November 15, 1989 indicate that worst case continuous noise levels from boilers were 75 dB at a distance of 185 feet. The location of the 50 dB L_{eq} noise contour is approximately 3,000 feet from the plant.

Northern California Power Authority (NCPA):

The NCPA is a natural gas powered auxiliary power generation plant located west of State Route 65 between the cities of Roseville and Lincoln. The NCPA has two turbine engines which are used for generating power during peak electrical demands. Noise level measurements conducted on August 12,

1991 indicate that one turbine engine produces a worst case continuous noise level of 72 dB at a distance of 100 feet. It is estimated that the 50 dB L_{eq} contour is located 1,800 feet from the plant when both turbine engines are in operation.

Mallard Creek Industries

Mallard Creek Industries is located on Duluth Avenue, and produces wood shavings and bark products for home and garden use. Major noise sources associated with the Mallard Creek Industries include front end loaders, and grinders. Noise level measurements conducted August 6, 1991 indicate that a short-term average noise level of 53 dB is produced at a distance of 900 feet. The location of the 50 dB L_{eq} contour is estimated to be approximately 1,300 feet from the plant.

Formica Corporation

The Formica Corporation is located on Cincinnati Avenue. Noise levels associated with the operation include blowers and HVAC units. Noise level measurements conducted on August 6, 1991 indicate that a short-term average noise level of 50 dB is produced at a distance of 1,200 feet.

Snowmaking

A number of ski resorts are located within Placer County. Many of the ski resorts include snowmaking a part of their operation. Ski resorts which currently use snowmaking include Squaw Valley, Alpine Meadows, Boreal Ridge, Northstar and Sugar Bowl. Noise levels associated with snowmaking vary based upon the type of equipment, number and configuration of snowmaking nozzles and direction the nozzles are pointing. Noise levels from snowmaking is produced by a high pressure air and water mixture passing through the snowmaking nozzle. The sound produced by the snowmaking nozzles can be subjectively characterized as being similar to that produced by a waterfall, with broad band frequency content.

Brown-Buntin Associates has conducted noise level measurements from snowmaking operations at Squaw Valley and Northstar ski resorts. Exterior noise levels at residences in Squaw Valley during snowmaking ranged between 47.5 and 76.4 dB L_{eq}. Estimates of noise levels associated with snowmaking at Northstar range between 66 and 79 dB L_{eq} at a distance of 2,400 feet.

Caltrans Road Maintenance Station - Tahoe City

The Tahoe City Caltrans road maintenance facility is located at 2000 Chalet Road, near State Route 89. Operations at this facility consist of the storage and dispatching of road maintenance vehicles. The facility operates 24 hours per day, as needed to maintain the state highway system. Although there are no significant on-site noise producing activities, noise is generated when road maintenance vehicles enter or leave this facility. The number of vehicle trips generated by this facility can vary considerably from day to day, especially during periods of snowfall. There are no noise-sensitive uses in the immediate vicinity of the maintenance station, and State Route 89 traffic noise dominates the ambient noise environment in this area.

Marinas and Boat Operations

Boat operations can be a source of noise, particularly during the summer months. Speed boats and jet skis were identified by the county staff as potential noise sources. Camp Far West Lake, Rollins Lake,

Folsom Lake and Lake Tahoe are used by motor boats and jet skis. BBA file data indicate that an average SEL of 75 dB is produced by motor boats at a distance of 50 feet. However, noise levels associated with boats can vary based upon the size of the motor and the type of muffler used on the engine. The State of California Harbors and Navigation Code establishes noise level standards for the operation of pleasure boats. However, enforcement of the standards is not rigorous.

Trap Shooting Clubs

Placer County has one trap shooting club located west of State Route 49, and north of Dry Creek Road. Noise associated with trap shooting is repetitive loud impulsive sounds of short duration. Noise measurement data indicate that the maximum noise level from a 12 gauge shotgun is about 97 dB at a distance of 50 feet.

AIRPORT NOISE

Airports and airfields in Placer County include the Auburn Municipal Airport, Lincoln Municipal Airport, Blue Canyon Airport and the Tahoe-Truckee Airport.

Auburn Municipal Airport

The Auburn Municipal Airport is situated on 210 acres in the northwest section of the City, 1/2 mile east of State Route 49 and one mile north of Bell Road. The Airport is a Basic Utility, Stage I category facility which can accommodate 75% of small general aviation aircraft (12,500 pounds gross weight maximum). The existing paved runway, Runway 7-25, is 3,100 feet long and 60 feet wide.

An Airport Master Plan and Environmental Impact Report are currently in progress for the Auburn Municipal Airport. The existing and worst-case future Airport noise contours which were prepared for these documents are shown in Figures 11-5 and 11-6 respectively. According to these contours, the noise sensitive use most affected by airport operations is the Rock Creek Mobile Home Park, located west of Highway 49 between Bell Road and Dry Creek Road.

BBA conducted continuous aircraft noise measurements at the Rock Creek Mobile Home Park from June 27-30, 1991 to gather single event noise level data and to compute the aircraft CNEL at that location. A Metrosonics dB-604 Environmental Noise Analyzer was used for the aircraft noise level measurements. The equipment was calibrated before use with a Bruel & Kjaer Type 4230 acoustical calibrator.

In order for an aircraft to register as a single event, the noise level generated by the aircraft had to remain above 60 dB for a minimum of 10 seconds. These thresholds were set in order to filter out non-aircraft events such as passing cars. The results of the aircraft noise level measurements are shown in Table 11-7.

TABLE 11-7

AIRCRAFT NOISE MEASUREMENT RESULTS
ROCK CREEK MOBILE HOME PARK
June 27-30, 1991

Date	Day of Week	Apparent # of Aircraft Departures	Range of Maximum Noise Levels, dB	Mean Sound Exposure Level, dB	Aircraft CNEL, dB
June 27	Thursday	98	61-81	79	50
June 28	Friday	8	61-77	80	40
June 29	Saturday	53	64-79	81	49
June 30	Sunday	83	62-81	81	53

Lincoln Municipal Airport

The Lincoln Municipal Airport is located on the western edge of the City of Lincoln. The airport has one runway 6,000 feet long with a heading of 15R/33L. Based upon the October 1986 Lincoln Municipal Airport Comprehensive Land Use Plan, there are approximately 200 aircraft based at the Lincoln Airport with an estimated 80,000 operations per year.

The 1990 California Aviation System Plan (CASP) indicates that the Lincoln Airport has 225 based aircraft with a total of 71,000 annual operations. The CASP states that the based aircraft include 201 single engine, 18 multi-engine, 1 jet and 5 rotocraft aircraft.

Figure 11-7 shows the Lincoln Municipal Airport noise contours for the year 2001. These contours were prepared in 1981 for the Lincoln Airport Expansion Environmental Assessment Report.

Blue Canyon Airport

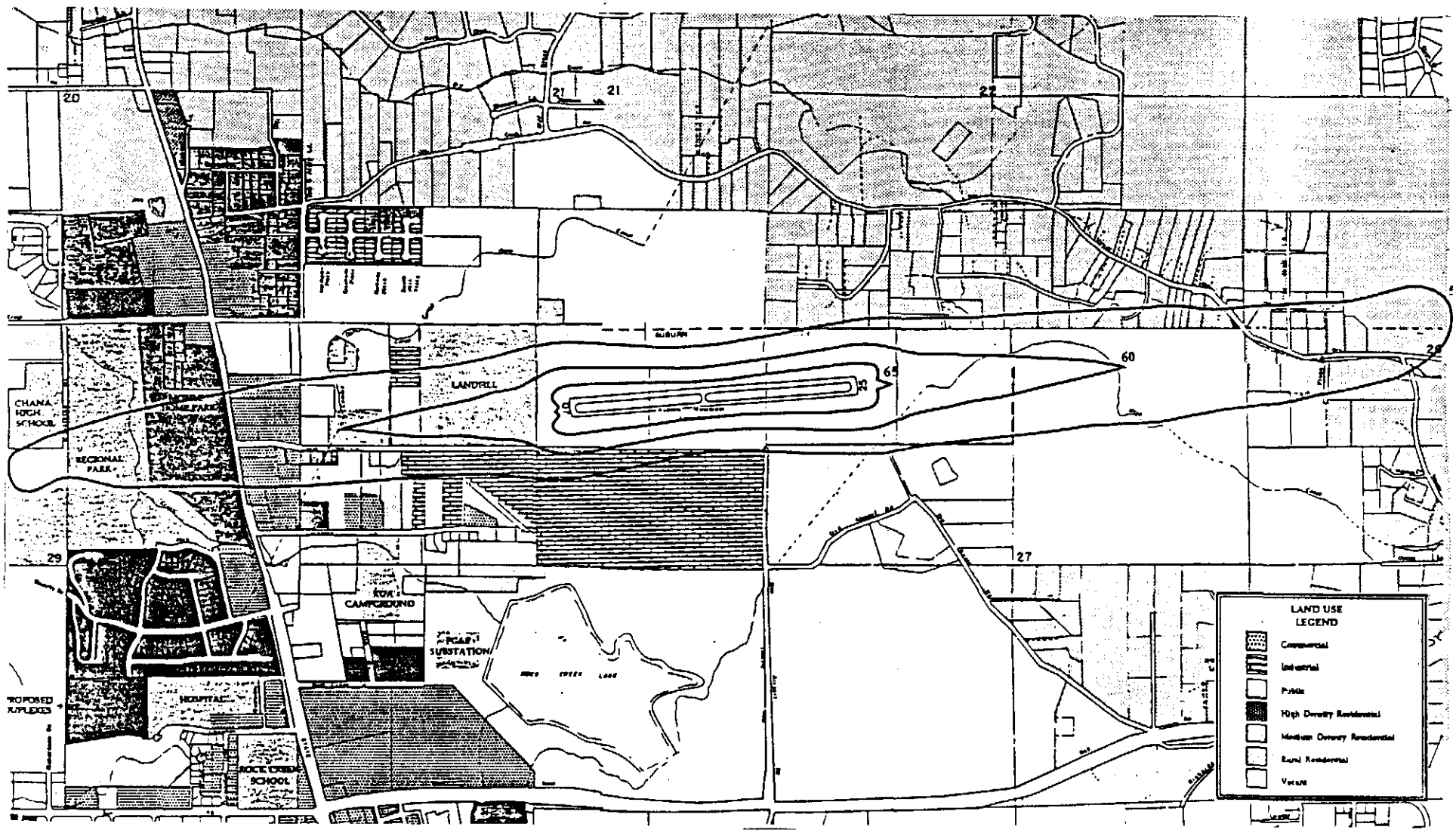
The Blue Canyon Airport is a general aviation airport. The airport has one runway 3,300 feet long at headings of 15/33. According to the 1990 CASP, there are 2 single engine aircraft based at the Blue Canyon Airport and a total of 2,000 annual operations. To date, noise contours have not been developed for the Blue Canyon Airport. Based upon the small number of annual operations, it is anticipated that the 65 dB CNEL contour is confined to the airport property.

Truckee-Tahoe Airport

The Truckee-Tahoe Airport is located off of State Route 267, south of Truckee, California. The facility is a general aviation airport which primarily serves as a base for local personal and recreational air traffic. Currently, there is no scheduled airline service to the Truckee-Tahoe Airport. It is anticipated that airline service may commence based upon potential growth of the area. Based upon the December 1988 *Truckee-Tahoe Airport Master Plan* prepared by Raymond Vail and Associates, there are approximately 132 based aircraft with approximately 33,000 operations per year. Future aviation demand forecasts project approximately 83,800 operations per year in the year 2010. The aviation demand forecast for the year 2010 includes 12,000 commuter/air taxi and charter operations. Figures 11-8 and

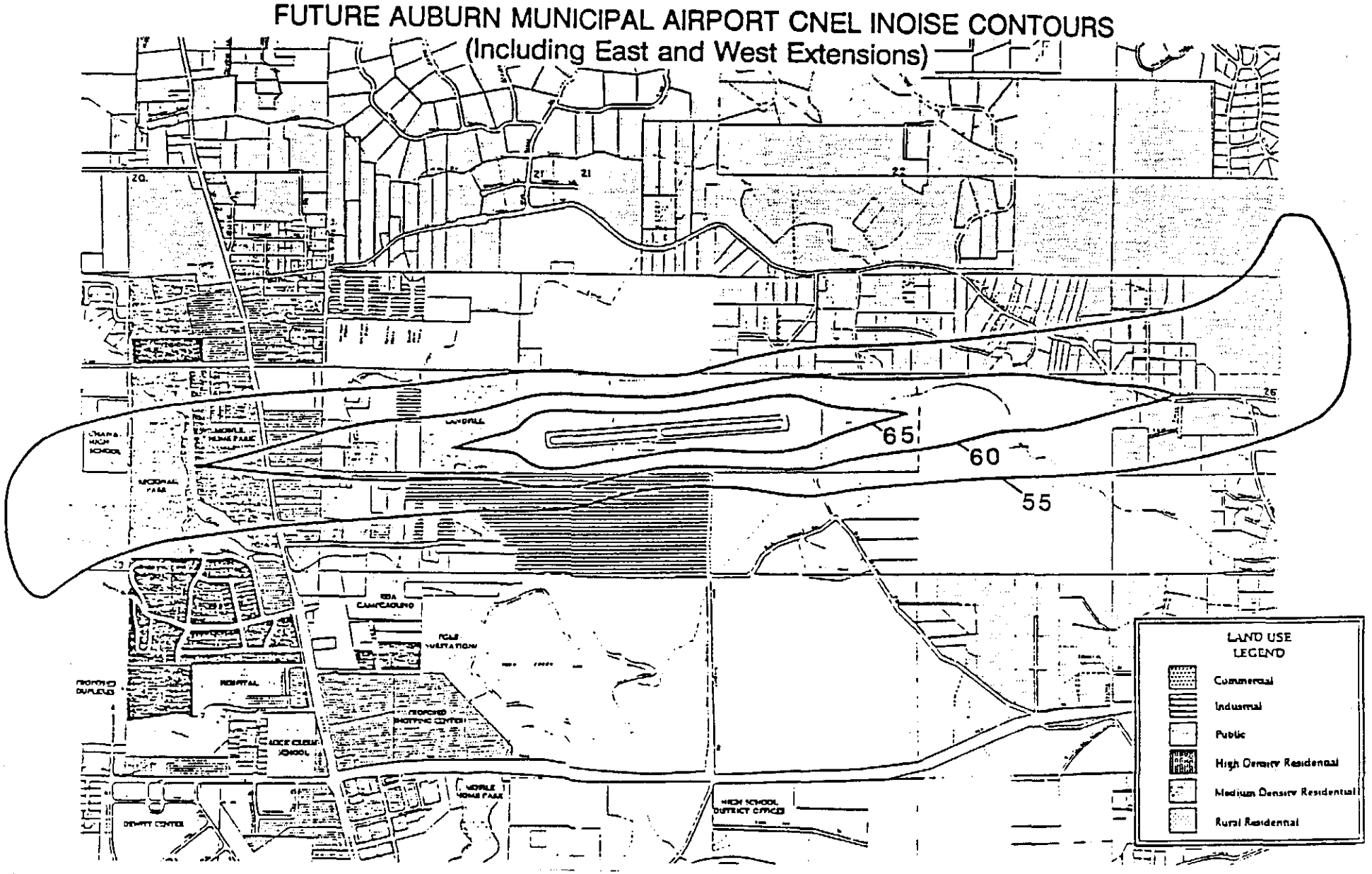
FIGURE 11-5

EXISTING (1986) AUBURN MUNICIPAL AIRPORT CNEL NOISE CONTOURS



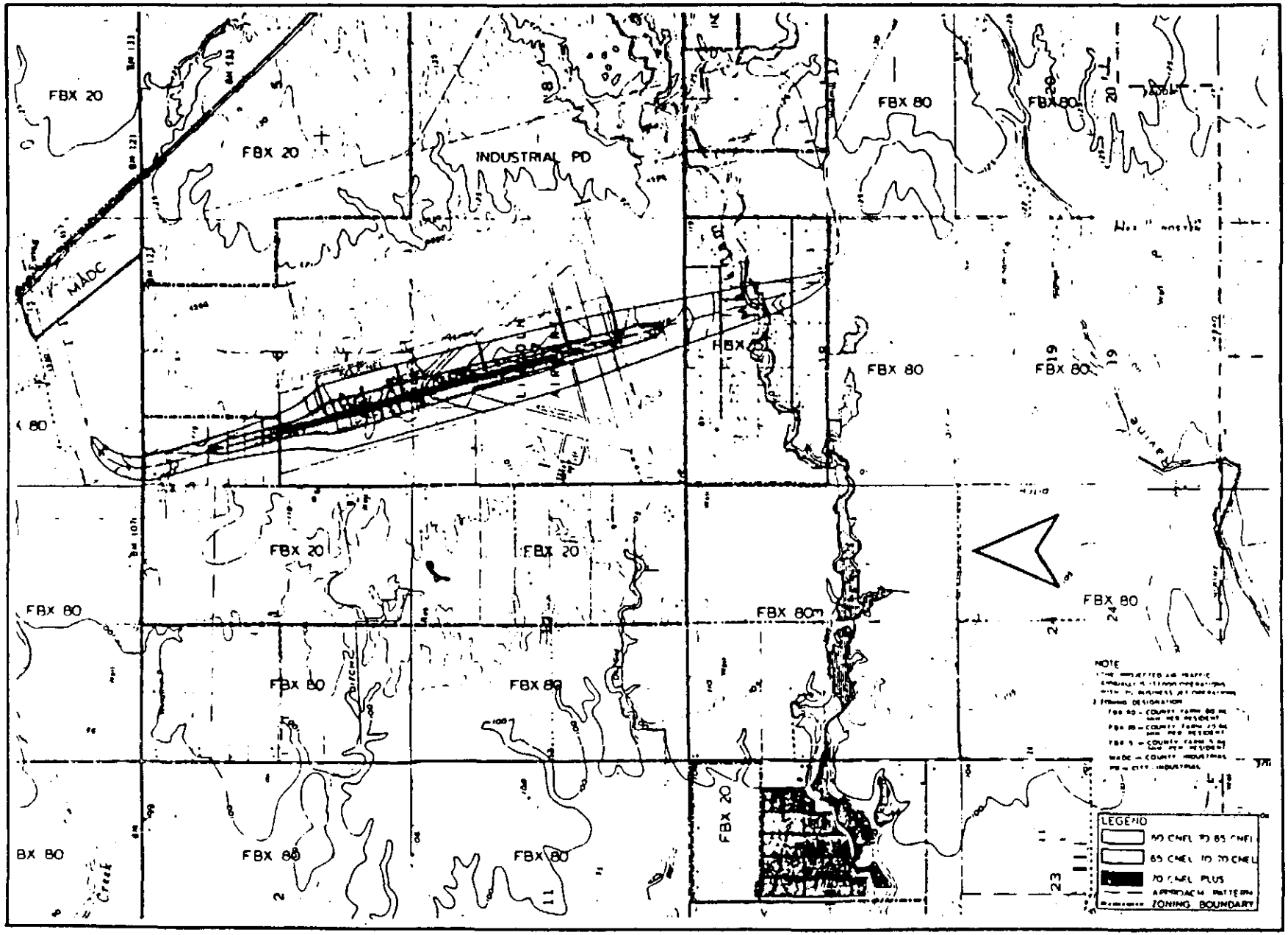
SOURCE: Auburn Municipal Airport Master Plan and Environmental Impact Report - 1987

FIGURE 11-6



SOURCE: Auburn Municipal Airport Master Plan and Environmental Impact Report - 1987

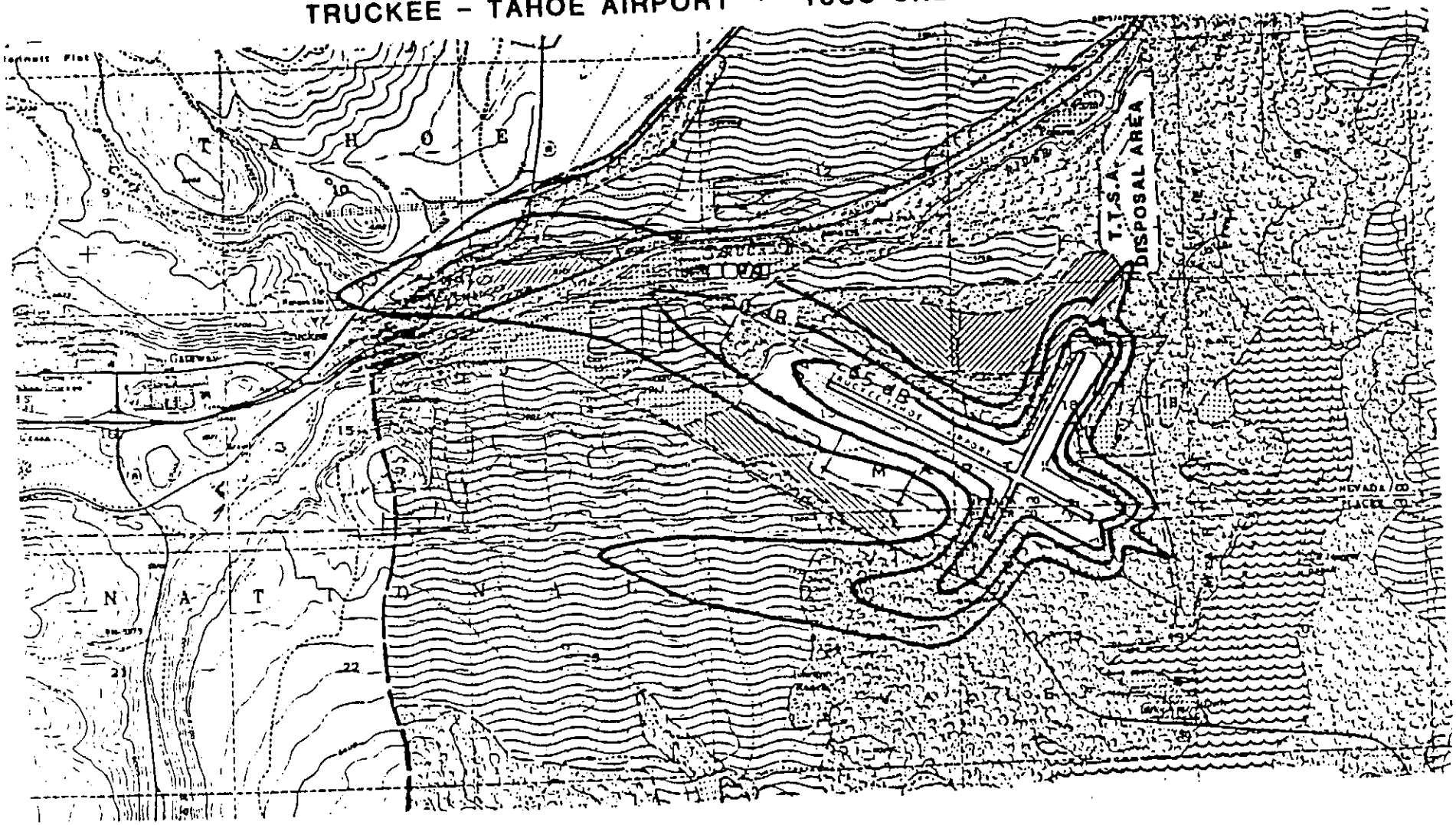
FIGURE 11-7
LINCOLN MUNICIPAL AIRPORT NOISE CONTOURS



Source: Lincoln Municipal Airport Comprehensive Land Use Plan - October 1986

FIGURE 11-8

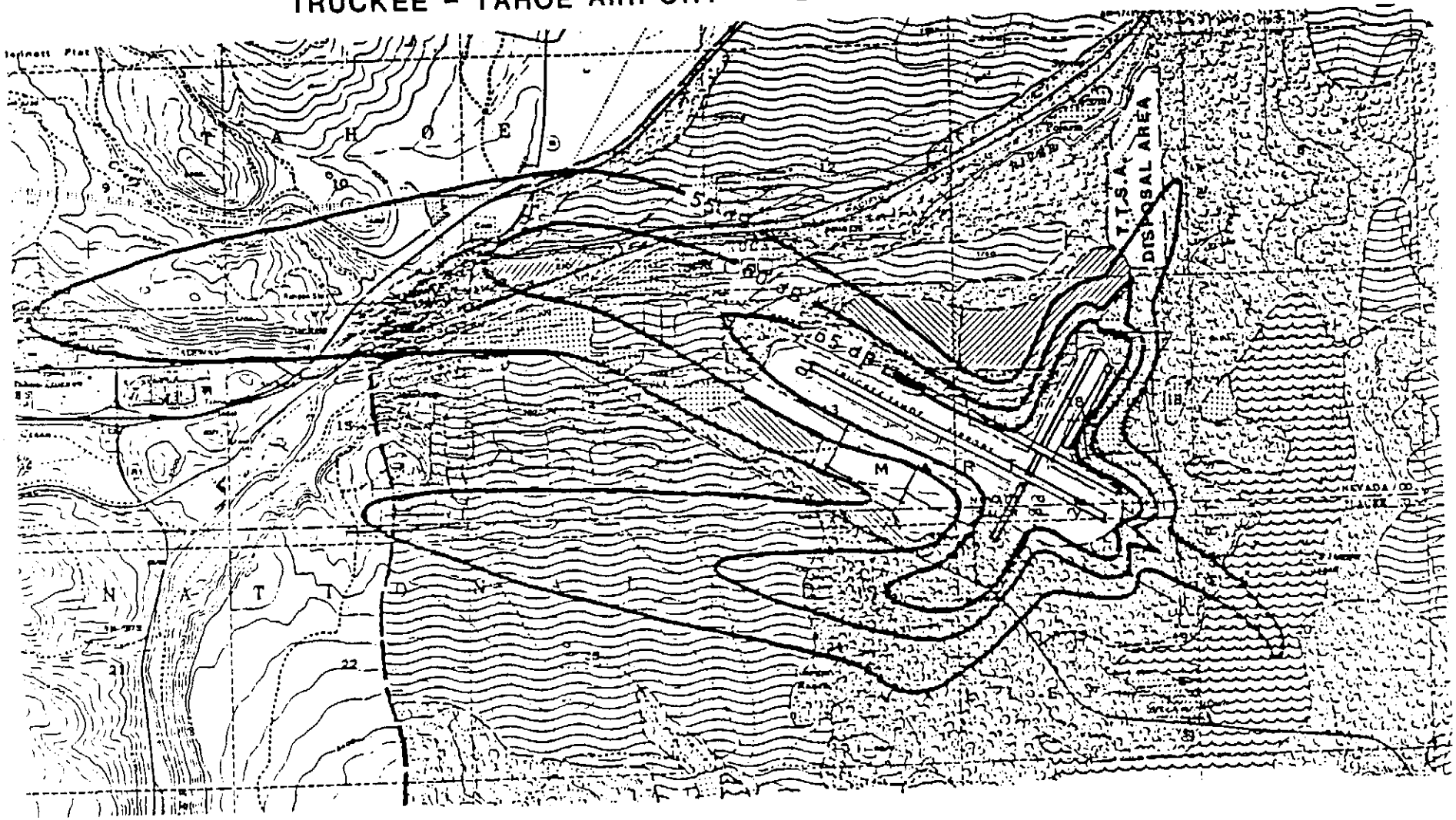
TRUCKEE - TAHOE AIRPORT - 1988 CNEL CONTOURS



SOURCE: Truckee-Tahoe Airport Master Plan - 1988

FIGURE 11-9

TRUCKEE - TAHOE AIRPORT - 2010 CNEL CONTOURS



SOURCE:Truckee-Tahoe Airport Master Plan - 1988

11-9 show the existing and future CNEL contours for the Truckee-Tahoe Airport which were prepared for the 1988 Master Plan.

McClellan Air Force Base

McClellan Air Force Base is located in Sacramento County approximately 4 miles south of the Placer/Sacramento County line, and south of the Dry Creek/West Placer Community Plan area. Current air operations result in noise impacts in the 60-70 dB range around Baseline Road and Watt Ave. The 60 dB noise contour extends northward towards Moore Road and then turns west towards Sutter County. (Figure 11-10) A Safety Zone also exists along the Placer/Sacramento County line west of Watt Avenue due to overflight associated with touch and go maneuvers at the base.

In May, 1994 the Foothill Airport Land Use Commission adopted a McClellan Air Force Base Airport Area of Influence policy plan amendment. This area of influence designation accomplishes has three key components. First, an overflight zone is established in Placer County within the area of touch and go maneuvers south of Baseline Road. Secondly, the Land Use Compatibility Guidelines for Noise that are contained in the McClellan Air Force Base Comprehensive Land Use Plan are adopted as land use guidelines in areas affected by noise from base operations. Third, a owner/buyer notification process is to be established to provide disclosure to owners and/or buyers of property within the Airport Noise Area or the Aircraft Overflight zone that base operations have the potential to affect property in the area.

11.3 COMMUNITY NOISE SURVEY

A community noise survey was conducted to document noise exposure in areas of the county containing noise sensitive land uses. For that purpose, noise sensitive land uses in the Placer County General Plan study area were considered to include residential areas, parks and schools. Noise monitoring sites were selected to be representative of typical conditions in the county.

Short-term noise monitoring was conducted in December 1991. Each site was monitored three different times during the day and night so that valid estimates of L_{dn} could be prepared. Seven long-term noise monitoring sites were established in Placer County as part of the General Plan Update and for previous project analyses to record day-night statistical noise level trends. The data collected included the L_{eq} and other statistical descriptors. Noise monitoring sites, measured noise levels and estimated L_{dn} values at each site are summarized in Table 11-8. Monitoring sites are shown by Figure 11-1.

TABLE 11-8

MEASURED NOISE LEVELS AND ESTIMATED DAY-NIGHT AVERAGE LEVELS (L_{dn})
Areas Containing Noise Sensitive Land Uses

Site	Location	Date	Time	Sound Level, dB				
				L_{90}	L_{50}	L_{eq}	L_{max}	Est. L_{dn}
1	Sheridan	12/2/91	8:10	49	52	54.5	79.5	
	Corner of 9th St. & H St.	12/2/91	16:20	45	48	49.0	59.0	
		12/3/91	22:05	39	52	42.5	53.0	52.5 dB
2	Penryn	12/2/91	9:30	38	42	53.0	70.0	
	Butler Rd.	12/2/91	14:30	39	44	51.5	65.5	
		12/3/91	00:46	36	39	45.5	62.0	53.8 dB

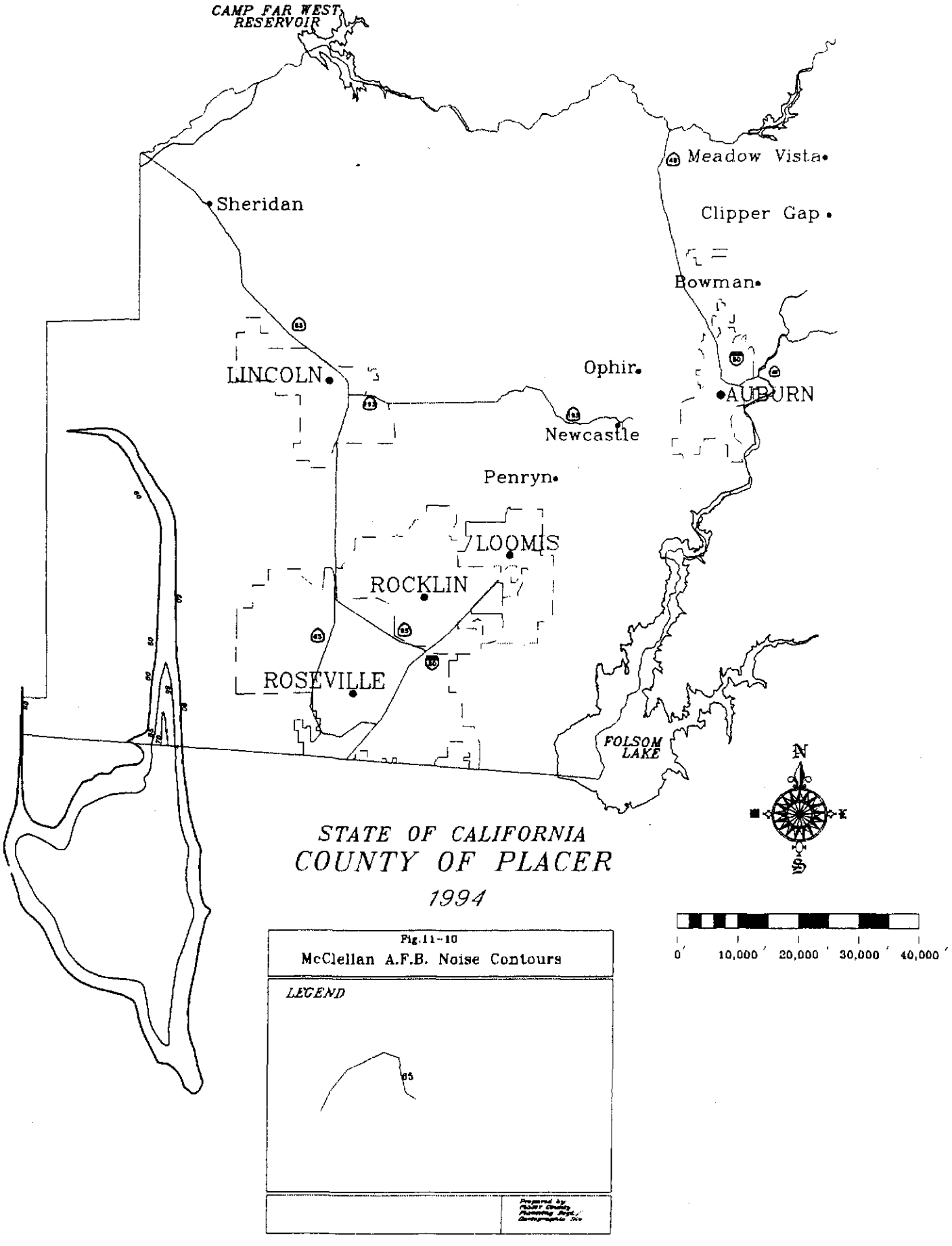

CAMP FAR WEST RESERVOIR
Meadow Vista
Sheridan
Clipper Gap
Bowman
LINCOLN
Ophir
AUBURN
Newcastle
Penryn
LOOMIS
ROCKLIN
ROSEVILLE
FOLSOM LAKE
N
E
S
STATE OF CALIFORNIA
COUNTY OF PLACER
1994
0
10,000
20,000
30,000
40,000
Fig.11-10
McClellan A.F.B. Noise Contours
LEGEND
65

TABLE 11-8

MEASURED NOISE LEVELS AND ESTIMATED DAY-NIGHT AVERAGE LEVELS (L_{dn})
Areas Containing Noise Sensitive Land Uses

				Sound Level, dB				
Site	Location	Date	Time					
	South of Loomis	12/2/91	10:45	38	43	50.5	64.5	
	Corner of Morgan & Wells	12/2/91	15:40	38	46	54.5	72.5	
		12/3/91	23:15	36	39	38.0	40.5	51.8 dB
4	Rattlesnake Bar Rd.	12/2/91	11:20	29	32	38.0	53.0	
		12/2/91	15:15	32	37	46.5	60.5	
		12/3/91	23:30	31	36	36.5	41.0	45.1 dB
5	Meadow Vista	12/2/91	12:10	33	37	44.0	63.5	
	Lake Estates Dr.	12/2/91	15:35	33	41	44.6	59.0	
		12/3/91	00:15	35	37	39.0	44.0	46.7 dB
6	Ophir	12/2/91	13:30	33	38	54.0	72.5	
	1700 Bald Hill Rd.	12/2/91	17:25	34	43	55.5	70.0	
		12/4/91	00:20	30	36	43.0	56.5	54.2 dB
7	Newcastle	12/2/91	14:00	42	48	55.0	71.5	
		12/2/91	16:55	44	52	58.0	73.0	
		12/4/91	00:05	38	42	41.0	57.0	55.4 dB
8	Colfax	12/2/91	07:30	50	53	53.8	66.0	
	Corner of Auburn Rd. & Depot Rd.	12/2/91	12:10	45	53	54.3	67.5	
		12/2/91	23:00	39	42	45.7	49.3	53.4 dB
9	Iowa Hill	12/2/91	08:10	42	42	42.0	43.5	
	Main Street	12/2/92	11:30	32	34	35.6	38.0	
		12/2/91	23:30	32	35	34.8	37.0	42.4 dB
10	Magra	12/2/91	08:55	46	47	47.5	49.0	
		12/2/91	14:35	46	47	48.7	50.0	
		12/2/91	22:30	42	43	44.4	49.0	51.6 dB
11	Dutch Flat	12/2/91	09:20	29	31	33.0	43.0	
	At the Community Center	12/2/91	14:15	31	33	35.7	42.0	
		12/2/91	22:15	30	36	39.5	46.5	45.5 dB
12	Alta	12/2/91	09:45	36	39	44.0	59.0	
	Alta School Rd.	12/2/91	13:45	34	36	38.3	42.0	
		12/2/91	22:00	33	36	40.0	42.0	46.8 dB
13	Applegate	12/2/91	10:30	30	50	47.1	59.0	
	Boole Rd	12/2/91	15:10	36	40	42.3	48.0	
		12/3/91	00:00	35	38	38.1	41.5	46.6 dB
14	Cisco Grove	12/5/91	11:35	50	55	56.0	64.5	
		12/5/91	22:10	45	47	51.0	58.5	
		12/6/91	08:52	49	54	55.0	64.0	58.4 dB
15	Blue Canyon	12/5/91	09:35	33	35	40.0	54.0	
		12/6/91	12:35	30	36	42.3	56.0	48.3 dB
16	Serene Lakes	12/5/91	12:25	23	25	32.0	56.5	
		12/5/91	22:25	28	31	35.5	49.5	
		12/6/91	09:40	23	25	34.5	54.5	41.7 dB
17	Alpine Meadows	12/5/91	11:25	35	41	50.5	72.5	
		12/5/91	22:30	31	32	32.0	35.0	
		12/6/91	11:20	40	43	45.5	57.5	47.2 dB
18	Granlibaken	12/5/91	15:20	49	51	51.0	54.5	
		12/5/91	23:15	36	42	41.5	45.0	
		12/6/91	10:40	40	43	44.0	53.5	50.0 dB
19	Emigrant Gap	12/5/91	08:30	48	52	54.0	59.0	
		12/6/91	14:10	49	52	55.0	61.0	59.0 dB

TABLE 11-8

MEASURED NOISE LEVELS AND ESTIMATED DAY-NIGHT AVERAGE LEVELS (L_{dn})
Areas Containing Noise Sensitive Land Uses

Site	Location	Date	Time	Sound Level, dB				
	Northstar	12/5/91	11:15	38	50	53.1	64.8	
	Basque Rd.	12/5/91	23:30	30	31	34.0	45.0	
		12/6/91	08:30	43	45	48.0	61.5	49.7 dB
21	Tahoe Pines	12/5/91	12:30	28	30	42.0	64.0	
	End of Grand Ave.	12/5/91	22:30	27	28	32.0	44.0	
		12/6/91	09:45	25	31	38.5	56.5	41.2 dB
22	Homewood	12/5/91	13:00	38	45	45.5	53.0	
	Fawn Rd.	12/5/91	22:10	28	30	34.0	46.5	
		12/6/91	10:10	44	49	56.5	76.0	52.0 dB
23	Chambers Lodge	12/5/91	13:25	29	33	39.0	51.0	
	Corner of McKinney Rubicon & Bellevue	12/5/91	22:00	28	29	31.0	39.0	
		12/6/91	10:30	28	31	39.5	56.0	40.0 dB
24	Ward Valley	12/5/91	14:00	31	39	40.5	46.5	
	Bottom of Sherwood Chairlift	12/5/91	22:50	29	30	33.0	44.0	
	at Alpine Meadows Ski Area	12/6/91	09:15	28	32	39.0	50.0	41.3 dB
25	Foresthill	12/3/91	15:00	36	40	46.6	60.5	
	End of Gold St.	12/3/91	22:00	33	38	38.5	42.0	
		12/5/91	08:00	35	39	44.0	58.5	46.9 dB
26	* Baxter; 34790 Alta Bonny Nook	12/9-10/91	--	--	--	--	--	59.9 dB
27	* Foresthill; Behind USFS Station	12/3-4/91	--	--	--	--	--	47.7 dB
28	* Weimar; 860 New Valley Rd.	12/2-3/91	--	--	--	--	--	44.6 dB
29	* Near Loomis; 2955 Del Mar	12/1-2/91	--	--	--	--	--	52.7 dB
30	* Tahoe City; 600 Fairway Dr.	8/1-2/89	--	--	--	--	--	52.4 dB
31	* Tahoe City; 525 Village Rd.	8/1-2/89	--	--	--	--	--	51.0 dB
32	* Tahoe City; Tahoe Tavern	6/11-12/91	--	--	--	--	--	52.6 dB

* = Continuous Monitoring Site

Community noise monitoring systems were calibrated with acoustical calibrators in the field prior to use. The systems comply with all pertinent requirements of the American National Standards Institute (ANSI) for Type I sound level meters.

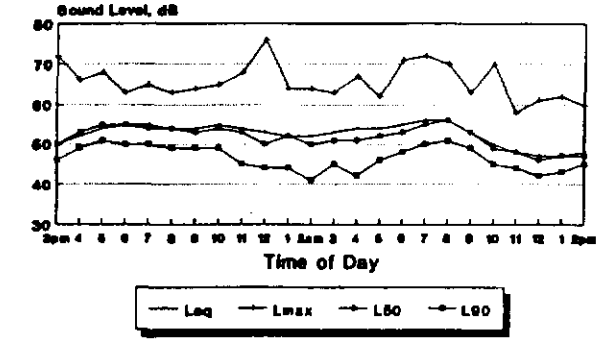
The community noise survey results indicate that typical noise levels in noise sensitive areas of the Placer County General Plan study area are in the range of 41 dB to 60 dB L_{dn}. Noise from traffic on local roadways, railroad line operations, aircraft overflights and neighborhood activities is the controlling factor for background noise levels in the majority of the study area. Noise from industrial uses was audible during the evening and nighttime hours at residential uses adjacent to some industrial areas. In general, most areas of the Placer County General Plan study area which contain noise sensitive uses are relatively quiet.

The L_{90} values shown in Table 11-8 represent background noise levels, where there are typically no identifiable local noise sources. The L_{50} values represent median noise levels. The L_{eq} values in Table 11-8 represent the average noise energy during the sample periods, and show the effects of brief noisy periods. The L_{eq} values were the basis of the estimated L_{dn} values. L_{max} values show the maximum noise levels observed during the samples.

The continuous monitoring data in Figures 11-11 and 11-12 show that ambient noise levels reach a minimum during the hours of 1-5 a.m., increasing during the daytime hours as a function of increased traffic and other human activities.

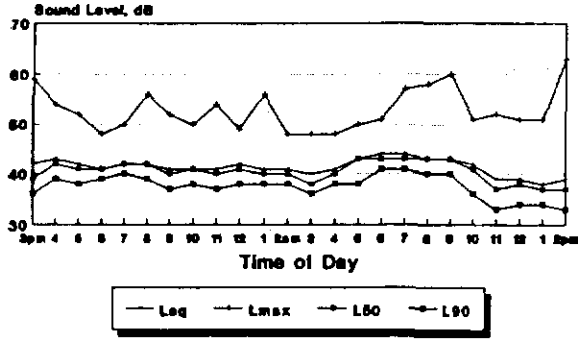
FIGURE 11-11

Baxter
34790 Alta Bonny Nook
December 9-10, 1991



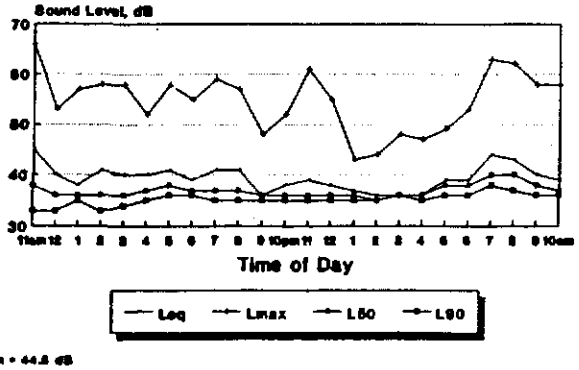
Ldn = 69.8 dB

Foresthill
Behind U.S. Forest Service
December 3-4, 1991



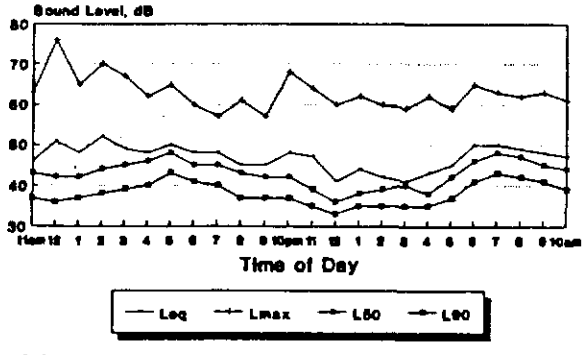
Ldn = 47.7 dB

Weimar
660 New Valley Rd.
December 2-3, 1991



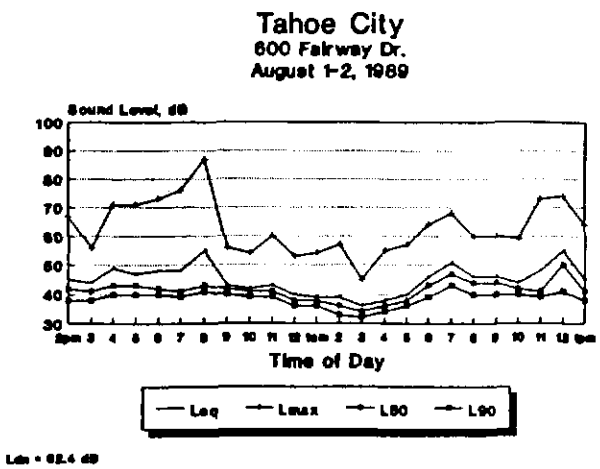
Ldn = 64.8 dB

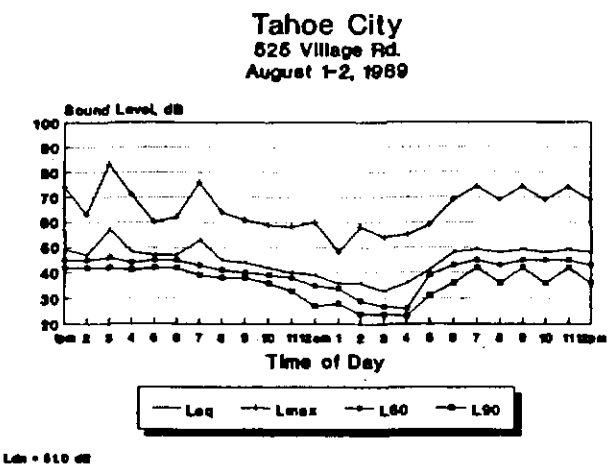
Near Loomis
2955 Del Mar
December 1-2, 1991

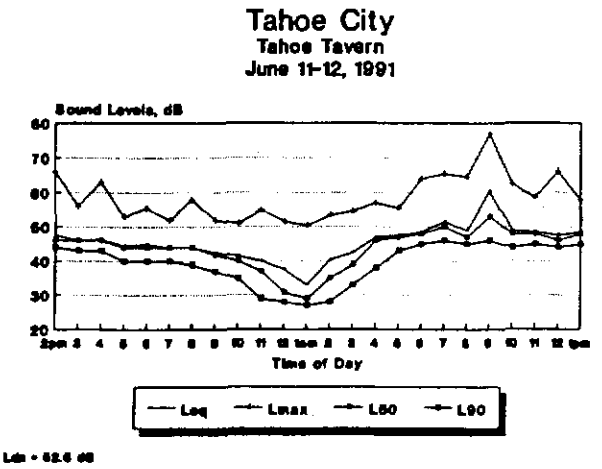


Ldn = 62.7 dB

FIGURE 11-12


Tahoe City
600 Fairway Dr.
August 1-2, 1989
Sound Level, dB
Time of Day
Leq
Lmax
L50
L90


Tahoe City
525 Village Rd.
August 1-2, 1989
Sound Level, dB
Time of Day
Leq
Lmax
L50
L90


Tahoe City
Tahoe Tavern
June 11-12, 1991
Sound Levels, dB
Time of Day
Leq
Lmax
L50
L90

11.4 FINDINGS

- Roadway traffic noise is the primary noise source in Placer County. Interstate 80, State Highways and major arterials dominate the noise environment at adjacent and nearby properties. Many small communities are located adjacent to Interstate 80, and therefore in some cases the entire towns may be dominated by roadway noise.

- Railroads are a major source of noise in Placer County. Communities were originally built adjacent to the railroads, and therefore railroad operations are located close to noise-sensitive land uses.

- Industrial uses, mining operations, and sand and gravel operations are significant sources of noise in Placer County. In some cases, noise-sensitive uses are located close to these noise sources. In other cases, vacant land or agricultural property provides a buffer between the fixed noise sources and noise-sensitive uses.

- Aircraft operations are also one of the major noise sources in Placer County. The McClellan Air Force Base, Auburn Airport, Lincoln Airport, and Truckee-Tahoe Airport are the most significant sources of aircraft noise.

11.5 PERSONS CONSULTED

Chevreaux, Joe. Chevreaux Aggregates

Clark, Loren. Placer County Planning

DelVecchio, Richard. American Olean

Johnson, Lynn. Placer County Environmental Health

Long, Dennis. Caltrans

McCormick, Mike. Placer County Landfill

Moore, Pete. Georgia-Pacific Corporation

Olson, George. HB Fuller Co.

Pierce, Vern. Wilson Construction Company

Terrant, Charlie. Patterson Sand and Gravel

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Raymond Vaily and Associates. Truckee-Tahoe Airport Master Plan, Prepared for Truckee-Tahoe Airport District, December 1988.

Aries Consultants. The California Aviation System Plan, Prepared for the California Department of Transportation Division of Aeronautics, August 1990.

11.7 GLOSSARY

Ambient Noise Level: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

Decibel, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure, which is 20 micropascals (20 micronewtons per square meter).

L_{dn}: Day-Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

Note: CNEL and L_{dn} represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum sound level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval. L_{10} equals the level exceeded 10 percent of the time (L_{90}, L_{50}, etc.)

Noise Exposure Contours: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and L_{dn} contours are frequently utilized to describe community noise exposure.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound level for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.